OCTOBER 1934

# COMMERCIAL CARJOURNAL



Reo Speedwagons range from ¾ to 4-6 tons. New low prices—\$530 up. 32 wheelbases—all with Reo Gold Crown engines. Tractor-Trailer units with correct load distribution and maximum payload capacity. All prices Chassis F.O.B. Lansing, plus tax.

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Myers Magazine Chassis Lubrication standard on 2-5 and 4-6 ton models; available at slight extra cost on other models.



## Speedwagons and Trucks

wit and sold to Precision Standards. Use the Reo erformance Gauge in selecting your next truck.

## YOU CAN RELY ON A REO!

Thirteen big Reos in the service of the Adohr Creamery, Los Angeles, with a million and a half miles already to their credit, are proving that they can take more than their share of the daily grind. Averaging from 30 to 200 miles each per day, these rugged trucks are setting a long-life and low-cost-service record that is characteristic of Reos all over the world. Interesting details of the Adohr operation will be supplied on request.

Write for Booklet "Buy on Facts"



EO MOTOR CAR COMPANY, LANSING, MICHIGAN



**GENERAL MOTORS TRUCK** 

AT ONLY \$925 CHASSIS f. o. b. PONTIAC

Are the loads you're called upon to haul in the 3-ton range? If so, you'll want to know more about the new General Motors 3-ton truck.

To begin with, its price is exceptionally low—only \$925 (chassis f. o. b. Pontiac). But that's only part of the story. In its ability to do more work, and save or earn more money, it's a downright value if there ever was one. There isn't an ounce of untried material in its rugged makeup. Nor a single untried engineering principle in its modern design. In short, it's a General Motors"engineered for the job" truck with the power, the stamina and the economy that thousands of experienced truck owners have come to expect from any truck bearing the **GMC** nameplate.

See this 3-ton truck or any one of the many other General Motors trucks or tractors from  $1\frac{1}{2}$  to 22 tons. There's one to fit your needs exactly. And there are facts to prove that it will be a more profitable investment.

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## COMMERCIAL CAR JOURNAL



with which is combined Operation & Maintenance Reg. U. S. Pat. Off.

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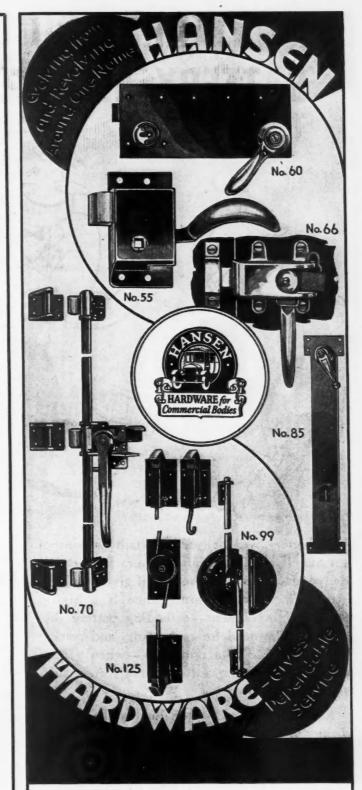
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pencable service.

To the Hansen line of body hardware have recently been added a new end-gate lock, a slam-and-take-up lock and a small-size refrigerator door lock.

Ask for folders illustrating and describing Hansen products, especially the new End Gate Lock and the Slam-and-Take-Up Lock.

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The World's Largest Manufacturers of Storage Batteries for Every Purpose
Exide Batteries of Canada, Limited, Toronto



COMMERCIAL CAR JOURNAL

Vol. X

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## Ears to the Ground

Giving You Information Some of Which is Inside, Some Advance, and Some Just Unusual



## A Wedge for Brakes

A number of manufacturers are viewing with interest a newly developed brake-actuating mechanism. It is entirely mechanical, operating on the wedge principle. The wedge rides on two rows of rollers. Brakes operated in this manner are supposed to give results comparable to power-operated brakes.

## Here's Dust in Your Ice

A sanding device suitable for trucks and especially for truck trailers is about ready for the market. This may be the answer to one of your winter worries. If you want advance information in greater detail tell us and we'll tell the manufacturer.

## Now It Can Be Told

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The maker of the two-speed axle for 1½-ton trucks which was first mentioned here in August is none other than the reputable Eaton Axle Co. A detailed description is being prepared by a staff man.

### Eaton Makes Things Easier

The Eaton company is also coming up with a mechanical device that will make truck and passenger car clutches as easy to operate as an accelerator pedal. Another device will effect the same ease of operation in brakes.

### A Low-Priced Truck

A well-known truck company (and you must consider this just a faint whisper) is getting ready to come out with a very low-priced truck that will make the low-priced field a bit more competitive. We understand it's to have a four-cylinder engine and that it's aimed particularly at operators who are yelping for economies.

## A Wise Safeguard

The Mack company has made a decision with regard to springs that is the height of sensibleness. We understand it is now impossible to buy a Mack truck with oversize tires without getting springs which will take care of the increased load capacity. The slight extra charge is included in the tire charge.

## Dope for Diesel Fuel

Doping gasoline to get better performance is familiar to all operators. The practice, we hear, will be continued even in the case of Diesel fuel. Work on the dope is going forward but more than that we can't tell you.



## Little Jeints the Nerts

The Hug Co. has just notified us it has developed a new line of trucks to be known as the "Little Giant" series. The deluxe model 19A is as spiffy as they come. Details next month.

## Dope on Diesels-Free!

Do you want everything available on Diesel developments in this country every booklet and piece of literature?

### Use the Postcard on Page 74

Note the reference letters below and simply check the corresponding letters on the postcard.

**E** —Dope on Diesels (please send everything that is available.)

ALSO, please send me the following free of charge:

F —Spark Plug Slide Rule Chart (solves spark plug selection problems.)

G —Facts About Tin Plated Pistons (a booklet that will wise you up on tin plating.)

H —How to Chart Truck Performance (a 40-page book with graphic charts in color.)

I —The Piston and Its Finishing (42 pages on right and wrong ways.)

J —Modern Tire Maintenance Manual (practical dope for fleets.)



## Red-Heads Are Hot

Experiments are being made with copper-plated cast-iron engine heads to find out if they will do as good a job under high compression as aluminum heads. Copper entered the picture when a Frenchmen discovered a way to weld copper to cast iron. Further, deponent sayeth naught.

## Want to Make Things?

We have before us a book called "Practical Everyday Chemistry" which, we are positive, will interest a lot of fleet maintenance men. The subtitle, "How to Make What You Use," will give you a clue to our reason for saying so. If you get a kick out of going to the trouble of making things instead of buying them with little or no trouble at all, you'll thank us for mentioning it here. If you want it just mention it to The Chemical Publishing Co., New York, and don't forget to enclose \$2.

### Front-End Data At Last

Your attention is called to the frontend alignment specification tables on pages 22 and 23 of this issue. Practically all current-production truck models are included, and you'll want to keep the table for reference. It is the first time, to our knowledge, that these truck data have been compiled by any publication. The revision, due about next May, will be even more complete. The cooperation of truck makers is hereby gratefully acknowledged.

### New Extra Axle Unit

A six-wheel attachment is about ready for the truck market. It has been worked up by the Erb Six-Wheel Axle Co., Philadelphia.

## Less Tough on You

For easier reference you will notice that white spaces separate the listings of makers in the specification tables beginning on page 55. Requests from the field set us to work and the improvement resulted without eating up much additional space. Hope you like it. G. T. H.

## In the Shadow of the I.



Plain Speaking on Whether Federal Regulation is Inevitable and What the Trucking Industry Should Do About It and Why

By GEORGE T. HOOK

Editor, Commercial Car Journal

HE shadow of Federal regulation has been creeping up on the trucking industry during the last five years. Signs of the times indicate that the shadow has about caught up with it. And the industry had better organize itself not only to protect but to promote its own interests.

The occasion calls for some plain speaking. Especially in view of the fact

that the American Trucking Associations, Inc., representing the industry, is about to hold its first annual convention at which the subject of Federal regulation will doubtless be heatedly discussed.

Two questions demand c and i d consideration. First, is Federal regulation inevitable, and second, what should the industry do about it?

There can no longer be any doubt that the present Administration in Washington intends to fufill its pledge to coordinate all agencies of transportation. This cannot be done without regulation of motor trucks and other

unregulated carriers and the Administration has been successful in making regulation a political possibility through the highly resourceful methods of its Coordinator of Transportation—Joseph B. Eastman.

MR. EASTMAN has approached his difficult task with Napoleonic strategy. First, he took no one's word for anything. He set statistical bloodhounds on the trail of facts which had been atlarge for a long time. Every public

statement by Mr. Eastman vindicates the belief that his surveys gave him a wholesome respect and a high regard for the future of highway transportation. They also convinced him that there was a need for regulation of interstate operations. His next task, he saw, was to win recruits. His approach was masterful. First he sold friends and foes of Federal truck regulation on his im-

agencies in the Interstate Commerce Commission. On this point he met with the objections of truckmen who have openly advocated Federal regulation as the only medicine to cure the industry's ills, but who have refused to accept the ICC as the doctor. Mr. Eastman tried to overcome objections by admitting that the ICC wasn't a perfect institution and that, like the railroads, it was



MEMBERS OF THE I. C. C.

Seated—Eastman, Meyer, Farrell, Aitchison and McManamy. Standing—Mahaffie, Lee, Brainerd (replaced by Commissioner Splawn, not in the picture), Porter, Tate and Miller

partiality, so that today none can question the sincerity of his motives and all must admit that he is dominated by a spirit of absolute fairness. All the while he was explaining and promoting his regulatory ideas.

His desire to enlist regulatory recruits from within the trucking industry is illustrated by a recent announcement in regard to a highly important matter. From the beginning, it will be remembered, Coordinator Eastman has favored placing control of all transportation in need of renovation, but that it was better to renovate a time-honored institution than to build a new one without any guaranty that it would be better.

This argument was weakly defensive, especially in view of the fact that he had authority to recommend changes which would bring about the desired renovation. The objections continued and just the other day Mr. Eastman revealed that he would meet them with a positive plan. He made this important statement:

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The new Interstate Commerce Building in Washington, D. C.—home of the I. C. C.

"It is quite possible. . . that the organization of the Interstate Commerce Commission can be changed in a manner which will go far to meet the objections which have been raised and at the same time enable the Commission to handle the proposed new duties more efficiently and effectively than would otherwise be possible. This is a matter to which I am giving careful study, and I hope to be able later on to announce conclusions which will be helpful to the whole situation."

Mr. Eastman has cause to believe, if he can take this final hurdle successfully, that he can count on active support of Federal regulation from some of the largest and most influential trucking interests in the industry.

In thus practicing the art of persuasion and shunning the very thought of coercive action, Mr. Eastman has stripped Federal regulation of the menacing mask it has worn for years because of railroad activities. For the first time truckmen, shippers and the public can see it without getting the jitters. The chief reason why there no longer is instinctive fear is because Mr. Eastman has shown himself to be utterly free of railroad influence. To such an extent is he free that, one may speculate, if the railroads should try to put anything over when a regulatory bill becomes a

Congressional issue, the staunchest defender of truck rights would be Joseph B. Fastman.

BECAUSE of all these events it is inevitable that Federal regulation of interstate truck operations should become a Congressional issue. When it does, no one can predict the outcome because the actions of affected interests will be governed entirely by the nature of the regulatory bill. That is the present stand of the National Industrial Traffic League which heretofore has opposed regulation.

At the moment it is not possible to count the noses arrayed in opposition to making regulation a Congressional issue. But plain speaking demands reference to a statement made in Cleveland by Coordinator Eastman that "motor truck opinion has been shaped too much by those who build trucks rather than by those who operate them."

The past influence of truck makers is not to be denied, and their motives—whether selfish or for the good of the industry—are open to debate. But future influence from this source must be entirely discounted. Manufacturers may speak for themselves but not for the truckmen. And it is to be doubted that they would speak at all if truckmen, through their national organization, should favor a pro-regulation policy.

As the industry stands this moment, it is committed to the principle of regulation as a necessary instrument for industrial welfare. Adoption of the Trucking Code left no doubt about that. It is necessary for the industry to decide immediately whether it prefers to go through with the code experiment and oppose Federal regulation, or whether regulation is a preferable substitute.

But no matter what the decision—and it is necessary to be emphatic on this point—the industry must organize itself for a most intensive regulatory battle. Whether fighting for the right kind of legislation, or fighting any kind of legislation the industry, through its national organization, will have to be intensely active.

A ND by intense activity is not meant the making of lengthy statements full of generalities before Congressional Committees. If the decision is to favor Federal regulation the industry must be prepared to promote the sort of legislation that will be in its best interest. If the decision is to oppose regulation, the industry must prove either that coordination of transportation agencies is not in the national interest or that the public interest is amply served by the code. Nothing short of facts will do.

Theoretical opposition may get to first base, but it won't score.

**OCTOBER**, 1934

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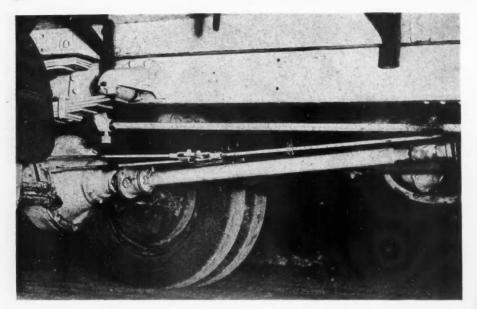
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## Fleet Id

Left-Brake linkage designed by J. C. Habiger (below) See No. 1



## Brake Hook-Up **Doubles Efficiency**

By Joseph C. Habiger Maintenance Supt., S. T. Johnson Co., Oakland, Cal.

1. One of our trucks gave us a lot of trouble with its brakes. There was only one cam to set the brakes and no possible adjustment, except to shorten the rods. It was decided to use the emergency brake in connection with the foot brake. I made one solid shaft with arms at each end to replace the usual two shafts, one of which was a tubing with arms outside of it. Each arm from the solid shaft ran to an equalizer about 4 in. wide, one of which was constructed on each side of car. Then I made four rods, two of which were attached to each equalizer and, from there, running to the brake lines. This provided an even pull.

The foot brake was set solid to the brake assembly and the hand brake coupled with a sliding joint. This made it possible for the foot brake to work independent of the hand brake without danger of being locked when foot brake pressure was applied. This hook-up provided an equal distribution of braking surface, more pressure and power. We abandoned putting on a booster for more pressure because it twisted the branke cross-shaft and had to be adjusted constantly.

## Revamping Oil System **Cuts Consumption**

By Frank Huntt Maintenance Supt., Hutzler Bros. Co., Baltimore, Md.

2. Our old trucks had what some people call pressure feed lubrication, but which was really more of a circuTHESE IDEAS PAY ON THE NOSE

FLEET operators are constantly inventing new things to reduce operating expenses. Sometimes it is to correct a mechanical shortcoming in a truck. At other times it is to develop additional equipment for their particular purpose and again it is done to fill a need in their shop equipment.

Here are ideas covered in this article:

1. Brake Hook-Up Doubles Efficiency-By Joseph C. Habiger, Head of the Repair Department, S. T. Johnson Co., Oakland, Cal.

2. Revamping Oil System Cuts Consumption; Flexible Grease Tube-By Frank Huntt, Maintenance Superintendent, Hutzler Bros. Co., Baltimore, Md.

3. Changed Oiling System Saves Bearings-By Earl Crowton, Maintenance Superintendent, Merchant's Express & Draying Co., Oakland, Cal.

4. Crankcase Drainage Filter-By W. C. Neal, Maintenance Superintendent, Philadelphia Suburban Water Co., Lansdowne, Pa.

5. Settling Tank for Drained Oil-By Billie Burgan, Fleet Superintendent, Hage's Ice Cream Co., San Diego, Cal.

6. Improved Winch Operation; Movable Safety Shields; A Handy Tool Dolly-By W. N. Warford, Head of Maintenance Division, W. H. Parrish Co., Oakland, Cal.

7. Making Reconditioning Jobs Last Longer—By Anonymous, Fleet Manager, Philadelphia, Pa.

8. Idea for Increased Engine Power-By J. L. Parks, Shop Superintendent, Horton Motor Express, Baltimore, Md.

lating splash system. These trucks consumed about two quarts of oil a day. We solved this excessive consumption by removing the gears from the oil pump and plugging up the inlet and

outlet. Then we removed the copper lines. Through the bottom of each connecting rod cap we drilled a 3/16 in. hole and countersunk it on the main bearing side. Some of the old copper

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## et Ideas for Cutting Costs

East is East and West is West but Here the Twain Meet With Neat Inventions Developed in Fleet Shops

lines when cut into lengths of ½ in. and flared to fit the countersunk hole made good dippers for the rods. These pieces of tubing had to be cut diagonally and spread a bit on the other end to make them pick up enough oil. When we were done, we had some good oil dippers, none of which have come loose. Now each truck uses about a quart of oil a week.

The explanation for the excessive oil consumption, was that the pump built up more pressure just above the rear main bearing than the system could carry off, and much of it leaked out of that bearing.

### Flexible Grease Tube

SOME of our trucks came equipped with a solid aluminum tube to lubricate the center drive-shaft bearing. This bearing was set in rubber so you can guess what happened every time the truck hit a bump, since one end of the tube was anchored solidly. After breaking enough tubes to know that a solid tube would not stay put, we had one made of flexible tubing and fitted

with the right kind of ends. This stopped the breakage.

## Changed Oiling System Saves Bearings

By Earl Crowton

Maintenance Supt., Merchants Express & Draying Co., Oakland, Cal.

3. We had constant difficulty with a 6-cylinder engine installed in some of our trucks. The number one, or front, connecting rod kept burning out. The motor was losing too much oil through the front main bearing, the front camshaft bearing and the idler shaft. After two or three years of this trouble, we finally hit upon a solution.

We put jets in the oil openings to the front camshaft bearing, another small jet to the idler shaft and plugged up the oil line to the timing gears. We ran a separate 3/16 in. oil line outside the motor from the oil filter to the top of the timing case, so that the oil would be forced into the timing gear, which otherwise would be starved for lubricant. In eight months not one connecting rod has gone out.



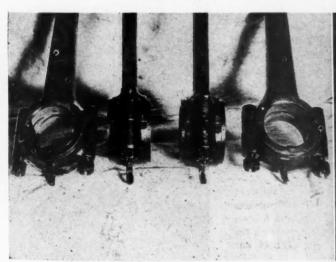
Earl Crowton: He changed the oiling system. See No. 3

## Crankcase Drainage Filter By W. C. Neal

Maintenance Supt., Philadelphia Suburban Water Co., Lansdowne, Pa.

4. The oil is forced through the filter by gravity. It is first dumped into a can. From this can it runs down a standpipe and is metered through a valve with an opening about the size of the lead in a lead pencil. It enters the

Shop-made con-rod dippers and disconnected oil pump. See No. 2



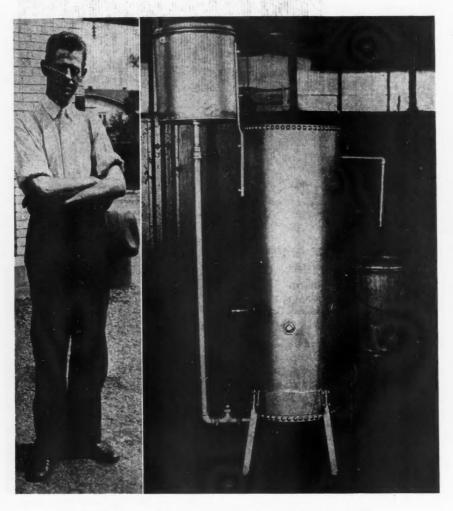


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## FLEET IDEAS FOR CUTTING COSTS



W. C. Neal and his crankcase drainage filter. See No. 4

bottom of what was a 50 gal. water boiler. The bottom quarter of this boiler is filled with water. The oil is forced through a plate perforated with holes about ½ in. in diameter. The object of the plate is to prevent the oil from passing through in a stream.

Rising through the water the oil encounters a wire tray holding some slag. This slag occupies about one-quarter of the space in the tank. The oil rises through the slag and resting on the top of the slag is a muslin bag full of bone black. There is about as much bone black as there is slag.

After filtering through the bone black the oil rises to the level of a drain pipe through which it runs to a can. It is then ready for use.

For a while we thought about hooking up an electric motor and forcing the oil through a battery of filters such as are standard equipment on new cars but we figured the only gain from this process would be better color and that does not interest us.

About 600 gal. of oil a year is put through this filter. When we clean it once a year, we get about 2 gal. of sludge out of it.

## Settling Tank for Drained Oil

By Billie Burgan
Fleet Supt., Hage's Ice Cream Co., San
Diego, Cal.

5. We put crankcase drainings into a drum and let it stand for a month. At the end of this period the gasoline dilution rises to the top and evaporates and the carbon and dirt settle to the bottom. The good oil stays on top like cream. The problem was in dipping out the good oil without stirring up all the impurities.

Bronze welded washers at different levels did the trick. These washers were tapped for pipe sizes and faucets were screwed in. Small cans catch the drip. We reuse 75 per cent of our drainings by this method.

## **Improved Winch Operation**

By W. N. Warford

Maintenance Supt., W. H. Parrish Co.,
Oakland, Cal.

6. Winches on our trucks are placed near the front of the truck platform with space between the winch and headboard for the sprocket and chain. The operation of the exposed sprocket and chain endangered the hands of the workmen and interfered with what they were doing. To insure greater safety I bored a hole through the headboard into which I pushed the base of the winch. The sprocket and chain was installed at the end of that base between headboard and the cab, concealing them. This operation pushed the winch forward, allowing more room for the load. The chain runs down to the shaft which is connected with the power take-

### Movable Safety Shields

BOTH safety and convenience dictated the designing of two sizes of safety shields covering emery wheels as a protection for the eyes. Ordinarily these shields are stationary and fastened per-

Settling tank for drained oil. See No. 5



COMMERCIAL CAR JOURNAL

manentl shield have an one reas against shields made fo in. and ate on l out of the shie goggles

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manently to the stand on which the shield rests. However, I sometimes have an article to grind down which for one reason or another cannot be placed against the emery wheel while the shields are in place. I had two shields made for two emery wheels, one of 10 in. and the other of 12 in., which operate on hinges and can be moved in or out of place at will. Of course, when the shields are removed, the men wear goggles.

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## A Handy Tool Dolly

A HANDY tool dolly has been built in the shop at an outlay of about \$5 plus labor, using cast-off material. A new dolly costs \$35 to \$40. It is mounted on the wheels of a grease barrel dolly, is 34 in. high, 2 ft. wide and 3 ft. long. It is constructed with three shelves: the top one for tools in use and the second and third shelves, 12 and 18 in. deep respectively, for tools not in use. The lower two shelves have doors that may be locked. The dolly was made of  $1\frac{3}{4} \times \frac{1}{2}$  in. angle iron.

## Making Reconditioning Jobs Last Longer

By Anonymous
\_Fleet Manager, Philadelphia, Pa.

7. The block is reconditioned in our shop, but instead of proceeding to fit pistons and rings, the block is first put on a drill press. An ordinary ½ in. wire brush is put in the chuck. We had to make a shaft, to hold the brush, which consists of a simple shaft with one end machined to fit the drill chuck and the other to hold the brush with a lock nut.

The brush used in each case has a diameter ½ in. larger than the bore of the cylinder. For instance, if the cylinder bore is 3½ in. the brush diameter for the job will be 4 in. The brush is run through the cylinder dry in a regular drilling operation at a speed of 600 r.p.m. The result is a highly polished cylinder which makes the job last longer.



## Idea for Increased Engine Power

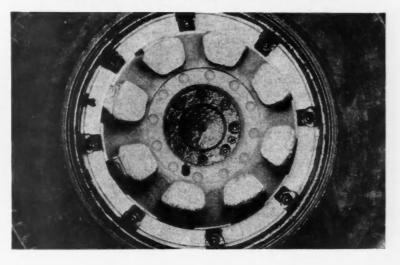
By J. L. Parks

Shop Supt., Horton Motor Express, Baltimore, Md.

8. We experimented with higher compression to get more engine power. In doing so, we wanted to keep costs down. So, on some of the heads we

had 3/16 in. milled off, though the average would be around  $\frac{1}{8}$  in. The manufacturer of these engines made a camshaft identical with the ones we were using, except that it had about a .044 in. higher lift. We used this camshaft in our engines. With the heads milled off and equipped with the new camshafts and a larger venturi, the engines turn faster and give more power.

Numerous breakdowns on overloaded semi-floating axle caused Joseph C. Habiger, S. T. Johnson Co., Oakland, Cal., to install this full floating axle. In making this changeover watch out for correct tread, spring pad dimensions, pinion length and brake hookup



Остовек, 1934



## HALLELUJAH!

Down in dear ole Alabammy where most of the tin-pan alley mammies come from, the colored truckmen have "cottoned" to the code of the trucking industry. They have formed the first colored chapter of a trucking association and they are out to get the scalawags (chiselers to you).

Their doings are serious but they do them so humorously. So, without further introduction and, as Bill Hayes says about Amos 'n' Andy, "Here they are."



## Darky Draymen Say 'Amen' to the Code

OWN in Birmingham, Ala., where certain characters have been made famous by the writings of Octavus Roy Cohen, negro draymen have organized the Birmingham colored chapter of the Alabama Truckers Association and "jined Mr. Roosevelt's code."

Now negroes are great "jiners," including the church first, the Knights of Pythias, Mr. Cohen's "Sons and Daughters of I Will Arise," and all other fraternal organizations. But the greatest kick of their lives came to those who signed up under the trucking code. Along with other benefits wrought by the new deal, their "membership" in the code has brought them more business at higher prices. They now rank President Roosevelt in the class with Moses and Booker T. Washington.

The darky draymen formerly had all sorts of prices including, chiefly, what they could get. As an example, the price for hauling a trunk from one specified location to another ranged anywhere from 50 cents to \$2. But that condition has changed. They are now all "brothers in that great fraternity," and their charges are uniform.

Lincoln Done Freed Us, Roosevelt Done Feed Us, Say Birmingham's Colored Truckmen in 'Jining the Code'

By GEO. H. WATSON

With their usual originality these negroes have invented their own term to apply to a price cutter that carries more opprobrium to them than "chiseling." This practice is said by them to be "scalawagging." The name of any trucker who fails to live up to the tenets of the order is quickly turned over to "Jedge Petree" (the NRA compliance officer for Alabama). As far as the conforming truckers are concerned the scalawag would get off light with hanging. Furthermore, the offending member loses cast not only with the colored chapter, but also in his church and social club.

The Birmingham colored chapter was organized through the initiative of J. O.



"Roosevelt done feed us"

COMMERCIAL CAR JOURNAL

Hamby Trucki tary of sists o rule, o ancient horse of

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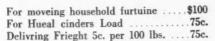


An NRA melon, no doubt!

Hamby, secretary of the Alabama Trucking Association and also secretary of the State code authority. It consists of about 40 members who, as a rule, operate only one truck, usually of ancient vintage, or occasionally a one-horse dray.

SECRETARY HAMBY at first asked each drayman to file an individual list of his charges. A typical "tariff" thus received from one of the "colored brethren" was as follows:

Trucks parked on a street assigned to them while their owners wait for a load



After receiving a few such specimens Mr. Hamby changed his plan and had the colored chapter as a whole agree on a code of prices. This required several meetings which were held in the due and ancient form of some fraternal order.



A member of that gr-reat fraternity waits for business-at code prices

The "Andy" of the organization was elected chairman and he specified that any member wishing to rise to a "pint of order" should first address him as "brother chairman" and get his permission to take the floor. All sessions opened with prayer in which the supplicator thanked God for the President and asked that he "be given strength to live a long time." After the copious amens, a song followed and the "brethern" then got down to "considerashion" of the code.

THE code, as prepared by a committee assisted by Mr. Hamby, was then taken up by sections, discussed and approved as written or modified. Some sections were warmly discussed but de-

corum was preserved by the presiding officer. For instance, the code as drawn by the committee provided a charge of 7½ cents per hundred for hauling miscellaneous freight. It developed that this was the same rate fixed by the larger transfer companies operated by "white brethern," so this figure was reduced to 6 cents per hundred lb., with a minimum charge of 35 cents. A motion to that effect was duly made and seconded. A flashily dressed negro in the back of the room who seemed to be the Florian Slappy or Kingfish of the chapter offered a "third" to the motion. The colored draymen decided that they could not charge as much as the regular transfer companies since they do not have as good equipment

Mr. Hamby pointed out to the draymen that while they authorized themselves to charge as low as 6 cents per 100 lb., nothing prevented them from charging more if they could get it. This statement was greeted by a chorus of "amens."

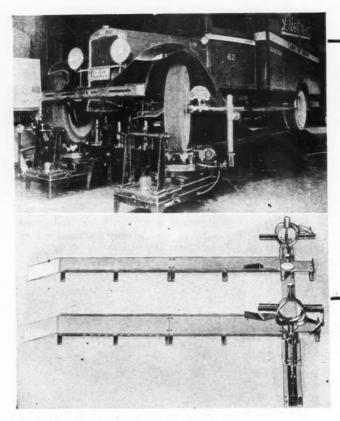
and do not carry insurance against

(TURN TO PAGE 42, PLEASE)

**OCTOBER**, 1934

URNAL

## Front End Alignment L



Top—Truck mounted on a Riess alignment unit. Bottom—Bean equipment for front-end alignment

HERE are facts available to show that misaligned front ends not only pay no dividends but are sometimes responsible for heavy assessments. The penalty of misalignment comes in the form of excessive tire wear and loss of time. Tires, especially in the larger sizes, represent a sizable investment which is worth protecting by squeezing the last possible mile out of the tires. Loss of time is usually under estimated. If the truck developes a shimmy at a certain speed the driver has to stay below that speed. If the truck steers hard the driver loses time in getting in and out of tight places and in parking. In some cases the time in itself may not mean so much but it may cause the loss of a customer.

Mechanics are more familiar with toein adjustment than they are with any of the other factors of front-wheel alignment. While toe-in is important it is only one of four factors governing frontend performance and these factors are so interdependent upon one another that it is impossible to get the value of

### \$¢\$\$¢\$

THE penalties of misaligned front wheels are in excessive tire wear and loss of time due to steering troubles, two factors measured strictly in dollars. Tires especially represent a greater part of this loss.

The remedy lies in correcting all four elements of front-end alignment. These four factors—toe-in, camber, caster, and king pin inclination—are defined in this article, which tells how to measure them and how to correct them.

For all available literature on front-end alignment check "C" on the convenient postcard on page 74.

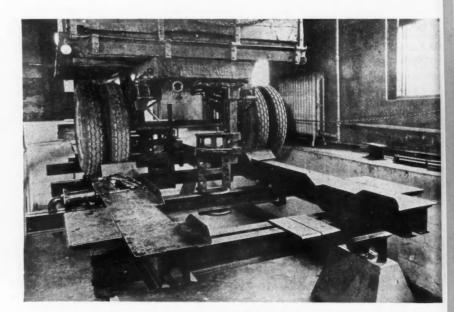
correct adjustment of one of them if the others are faulty.

Toe-in can be checked with several types of

equipment. Probably the oldest type is the telescoping rod and sleeve with the scale in inches. A length of chain at each end made it possible to keep the distance to the floor uniform for measurements front and rear when the rod was inserted between the felloes of the front wheels.

Another type of toe-in gage consists of a rod mounted on two pedestals with pointers which measure from tire center to tire center on a scale. Still another type of equipment for this purpose is the fixture that sets up against the front wheel on the outside and with the position known the instrument measures the position of the other wheel. Other equipment gages toe-in by measuring the side drag on the front wheels when the car is driven over tracks or rollers.

Toe-in must be measured with the wheels in the straight ahead position because when they are turned you



Aligning a trailer axle with Bear equipment

COMMERCIAL CAR JOURNAL

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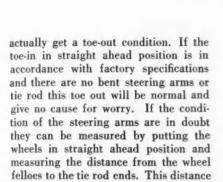
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## Lines Up Savings

Check Toe-in. Camber. Caster and King Pin Inclination When Steering Troubles Arise and Tire Costs Run a Temperature

By HENRY JENNINGS

Technical Editor



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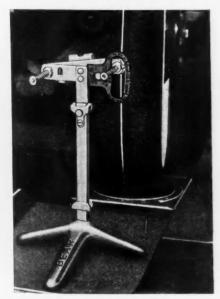
URNAL

TOE-IN is adjusted by shortening or lengthening the tie rod. This can be done by turning the tie rod ends on the threads if tie rod bolts are used. If the tie rod ends are of the ball and socket type the effective length is changed by removing or installing spacer washers in the socket.

should be the same on both sides.

Camber can be measured by a fixture that sets against the wheel on the out-(CONTINUED ON PAGE 29, PLEASE)

Bear caster-king pin gage





Aligning a truck front-end with Weaver equipment

## WHAT'S WHAT AND WHAT TO DO

TOE-IN—is the amount (measured in inches—difference between D and C) that front wheels are inclined toward each other at the front when the wheels are in straight ahead position. .Toe-in must be correctly adjusted to:

Prevent toe-out.

Compensate for wheel camber.

CAMBER—is the amount illustrated by A and B (usually measured in degrees) that the front wheels are inclined outward at the top. Camber must be correctly adjusted to:

Compensate for variations in adjustment and wear throughout the steering linkage which would produce negative camber.

Compensate for crowned roads and permit normal contact between road and tire.

Reduce side thrust on the king pins and take up end play by forcing the assembly against the thrust collars.

CASTER—is the amount (measured in degrees) that the top of the king pins are tilted toward the rear of the vehicle. Caster must be correctly adjusted to:

Prevent negative caster.

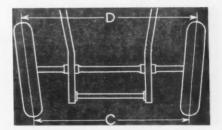
Assist in straightening up after a turn. Aid in keeping a straight ahead course.

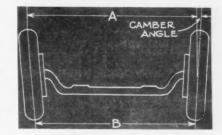
KING PIN SLANT—is the amount (measured in degrees) that the tops of the king pins are inclined toward the center of the car. King Pin Inclination must be correctly adjusted to:

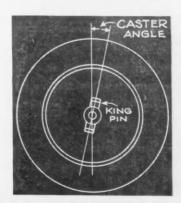
Obtain center point steering\* which results in easy steering wheel action.

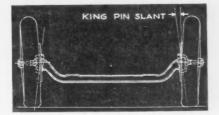
Aid in keeping a straight ahead course.

\*Center Point Steering—is the name of front end design in which the front tire contacts the ground at the same point that a projected center line of the king bolt would









See Front End Alignment Specifications for Current Truck Models on Pages 22-23

**OCTOBER**, 1934

## Front End Alignment Specifications

Copyright 1934 by the

TRUCK MAKES AND MODELS	TOE-IN (in inches unless shown otherwise)	CAMBER (in degrees)	CASTER (in degrees)	KING PIN (slant in degrees)	TRUCK MAKES AND MODELS	TOE-IN (in inches unless shown otherwise)	(in degrees)	CASTER (in degrees)	KING PIN (slant in degrees)
ARMLEDER 11H, 11HA, 21H, 21HA, 31H, 31HA, 61E	1/4° 1/5°	1 2		8 0	DODGE—Continued H43, H44, H44X (1933) F40, F41 (1930) F42 (1930) F60, F61, F62 (1930)	1/32 - 3/32 3/8 3/8 3/8 3/8 3/8 3/8	2 2 2 2	$ \begin{array}{c} 1\frac{1}{2}-2 \\ 3\frac{1}{2} \\ 2\frac{1}{2} \\ 3\frac{1}{2} \end{array} $	7 9 9
AUTOCAR RG, DF	1/6-1/8	1	L2½	8	FS75 (1933)	3/8	$\frac{2}{2}$	$\frac{31_{2}}{31_{2}}$	9
D., N, NF. S. T.	1/16—1/8 1/16—1/8 1/16—1/8 1/16—1/8	1 1 1 1 1 1	L2 L2 <sup>1</sup> / <sub>4</sub> LN1 <sup>1</sup> / <sub>2</sub> LN2 <sup>1</sup> / <sub>4</sub> LN2 <sup>2</sup> / <sub>3</sub>	8 8 8	DUPLEX SAC, M (1929-34) K (1933-34)	3/16 3/16	2 2	2 2½	0 .
CUD	16-18	1	LN2½ L3¼	8	ESCO 233, 234 (1933-34)	1/4	2	13/4	71/2
UDF. UN 109 w. b. or under. UN 128 w. b. or over. UNF, US. UT.	1/16-1/8 1/16-1/8 1/16-1/8 1/16-1/8	1 1 1 1 1 1	L3 <sup>1</sup> / <sub>3</sub> L3 <sup>1</sup> / <sub>2</sub> L3 L3 <sup>1</sup> / <sub>4</sub> L3	8 8 8 8	FAGEOL 101, 135, 250, 300, 370, 626, 646, 826	BO½ P¾6-¼	1	2	8
AVAILABLE T10, T13, T20, T23, T27, T30, T37, T39, T40V, T34, T44V, T45, T50 (1931) T12, T20, T23, T25, T30, T35,	1/8-3/16	2	2	0	FEDERAL 4FW, E6, D, D2, D3, D4, E2, E3, E4 (1930-33) F7 (1930-32) A6, A6T, A6TW, A6SW, A600	1/4 1/4	1 1	2 2	7½ 7½ 7½
T39, T43, T45, T50 (1932).	1/8	1	2	8	(1930-33) T10B, T10W (1930-33)	1/4	2	$\frac{3\frac{3}{4}}{3}$	7½ 9½
W140, W200, W230, W300, W400, T43, T45, T50 (1933)	3/16	1	2	8	A600T, A600S (1930-33) U6.U6SW.4C6.4C6A(1930-33)	1/4	2	33/4	91/2
BIEDERMAN 10, 20, 25, 30, 35, 40, 50, 55, 60, 70, 80 (1932-1933)	1/2°	2	4	8	4C6SW, 4C6ABS (1930-31) C7, C7W, CB, C8W (1932-33). X8, X8R (1930-33). E4B (1933). A7, A8 (1931-33).	1/4	$\begin{bmatrix} 1\\1\\1\\2 \end{bmatrix}$	$2\frac{3}{4}$ $2\frac{1}{2}$ $2\frac{3}{4}$ $3\frac{1}{2}$	8 8 0 0
BROCKWAY 80, 90 (1932-33) 100, 150 (1933) 120, 140 (1930-33) 141, 170, 195, 220 (1930-33) 160, 260 (1932-33)	1/16-1/8 1/16-1/8 1/16-1/8 1/16-1/8 1/16-1/8	2 2 2 2 2 2	1-2 1-2 1-2 1-2 1-2	9 7 7 0 0	A7, A8 (1931-33)	1/2-3/2 1/2-3/2	2 2 2 2	5 L3½ L3½	7 7 7 7
CHEVROLET Commercial		1	13/4	7	FWD All except M5, M7	1/4	B1½	5	0
Utility	5/64-1/8 5/64-1/8	1	23/4	7	M5, M7		P3 B1½	5	41/2
<b>DAY ELDER</b> 75, 85, 110, 130, 150, 160 200, 240, 285, 345, 402, 30B		1 1	11/2	8 8	GMC		P3	31/4	
DIAMOND T 210, 211, 226	1/8 1/8 1/8	1R 2R 2R 2R 2R 2R 2R	1½ 2½ 2½ 2½ 3 3 2½	9 9 7½ 7½ 0 0	T18, T23 T33 T43. T51, T61 T83. T84SX, T85 T90. T95, T110, T130	14° 14° 14 14 14°	1½ 1 1 1 1 1 1 1	4 4 4 1/8 2 2 2 3/4 2 2 3/4	71/4 8 8 8 8 8 8 8
1515, 1201, 1203, 1602A, 1603, 2501	1/4	2R	41/2	0	G-P 425, 435	3/16	1	2	8
DODGE UF10 (1930-32)	1/2-3/2 1/2-3/2 1/2-3/2	2	11/2-2	9	445, 455	1/4	1 1	2 1½	8
UF30, UF31 (1930-32) UG30, UG31 (1931-33) UG43, UG44 (1932-33)	1/2-1/2 1/2-1/2 1/2-1/2	2 2 2	1½-2 1½ 1½-2	7 7 7 7	HUG 23, 42 (1933-34)	0-3/16	2	0	71/2
F10, F30, F31 (1930-32) G30 (1932-33) G31 (1932-33)	1/2-3/2 1/2-3/2	2 2 2	1½-2 1½-2 1½	7	418, 70, 87K, 87Q, 97L, 99 (1933-34)	0-3/16 0-3/16	2 2	3/4-1 0	0
F35, F36 (1930-32) G43, G44 (1932-33) G30, G31 (1933) HC, HCL (1933) H30, H31 (1933)	1/2-3/2 1/2-3/2 1/2-3/2 1/6	2 2 2 1/2 2	1½-2 1½-2 1½-2 1½-2 1½-2 1½-2 1½-2 1½-2	9 7 7 9 7	INDIANA 47DR, 43DR, 19DR, 17DR, 17ADR, 17, 17A 95DR, 95	0-1/8	2 1	1½ 1½	8 0

B-Balloon Tires

P-High Pressure Tires

L-Truck Loaded

COMMERCIAL CAR JOURNAL

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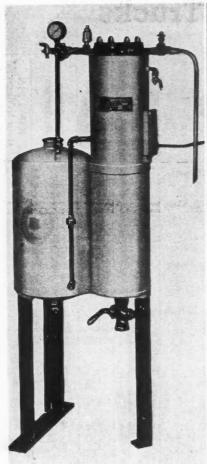
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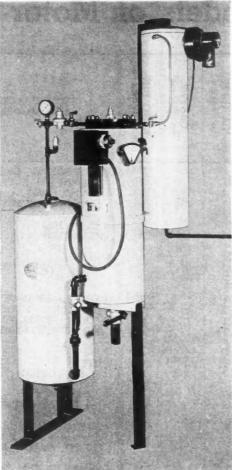
TRUCK MAKES AND MODELS	TOE-IN (in inches unless shown otherwise)	(in degrees)	CASTER (in degrees)	KING PIN (slant in degrees)	TRUCK MAKES AND MODELS	TOE-IN (in inches unless shown otherwise)	CAMBER (in degrees)	(in degrees)	KING PIN (slant in degrees)
INDIANA—Continued 17ASW151, 17SW251, 17SBT- 251, 955W75, 95SBT151 125B, 14B, 16, 85	0-1/8 0-1/8	1 1	1½ 1½	8 0	STUDEBAKER—Continued \$40, \$50, \$60. \$21, \$31 (1932). \$41, \$51, \$61, \$120, \$130, \$140,	1/16-1/8 1/16-1/8	0-1 0-1	1/4-3/4 1/4-3/4	8 9
INTERNATIONAL A1, A2, B2, M2, B3, B4 A4, A5, A6.	, ,	1 1	$\frac{1}{2^2}$	8 8	\$150, (1932) \$2, \$4 (1933) \$6, \$8 (1933)	1/16-1/8 1/16-1/8 1/16-1/8	0-1 0-1 0-1	$\frac{1}{4} - \frac{3}{4}$ $\frac{1}{4} - \frac{3}{4}$ $\frac{1}{4} - \frac{3}{4}$	8 9 8
A7, A8	3/16 7/82 7/32 1/8	1 2	$\frac{2}{3}$ $2\frac{1}{2}$	8 7½	WALTER FN, FM, FKD, FCS, FBS, AC1, S	N1/3°	1½	5	2
KENWORTH         All Models (1933-34)         101, 101B (1930-32)         85, 86, 70 (1930-32)         All others (1930-32)	1/0	1 1 1 1½	1 1 1	8 7½ 9 7½	WARD LA-FRANCE 15R, 25R14, 25R16, 25R18, 30R19, 30R23, 35R 55RH, 75RW, 100RW	1/8 1/8	1 1	1 1	8
<b>KLEIBER</b> 80, 100, 120, 140	2° 3°	1 1	*******		<b>WHITE</b> 15, 15B (1921-31)	P <sup>3</sup> / <sub>16</sub> -5/ <sub>16</sub> B <sup>1</sup> / <sub>16</sub> -3/ <sub>16</sub> P <sup>3</sup> / <sub>16</sub> -5/ <sub>16</sub>	1½	1½	0
LE MOON 150, 200, 300, 400, 500, 600,					160, 161, 162 (1931-33)	B <sup>1</sup> / <sub>16</sub> - <sup>3</sup> / <sub>16</sub> P <sup>3</sup> / <sub>16</sub> - <sup>5</sup> / <sub>16</sub>	1	$3^2/_3$	81/
700, 800, 900, 1000, 1200	1/16-1/8	1	2	8	20, 20A (1921-30)	B <sup>1</sup> / <sub>16</sub> -3/ <sub>16</sub> P <sup>3</sup> / <sub>16</sub> -5/ <sub>16</sub> B <sup>1</sup> / <sub>16</sub> -3/ <sub>16</sub>	1½	31/3	81
MAR-HERR. All (1931-34)	1/8	0	4	0	210, 211, 212 (1931-33) 40, 40A, 45, 45A, 50B Elliott	P3/16-5/16	1		
MENOMINEE A15 (1934)	B <sup>1</sup> / <sub>4</sub> P <sup>3</sup> / <sub>8</sub>	1	2	9	type axle (1921-30) 50B Reverse Elliott type axle.	B <sup>1</sup> / <sub>16</sub> -3/ <sub>16</sub> P <sup>3</sup> / <sub>16</sub> -5/ <sub>16</sub> B <sup>1</sup> / <sub>16</sub> -3/ <sub>16</sub>	11/2	0 3½	81
DX6, DN6, A30, N6, JX6, 6W8 (1934)	P3/8 B1/4 P3/8	2	2	0	51, 51A Elliott type axle (1927-31)	P <sup>3</sup> / <sub>16</sub> -5/ <sub>16</sub> B <sup>1</sup> / <sub>16</sub> -3/ <sub>16</sub>	11/2	21/2	0
MORELAND All		1	2-21/2	71/2	51A Elliott type axle, 51AS (1927-31)	P <sup>3</sup> / <sub>16</sub> -5/ <sub>16</sub> B <sup>1</sup> / <sub>16</sub> -3/ <sub>16</sub>	1	3½	81
OSHKOSH L,H,HC,HXC,FHX(1922-30)	1/4	3	31/2	0	52, 52D, 52T (1926-30)	P <sup>3</sup> / <sub>16</sub> -5/ <sub>16</sub> B <sup>1</sup> / <sub>16</sub> -3/ <sub>16</sub> P <sup>3</sup> / <sub>16</sub> -5/ <sub>16</sub>	1½	0	0
L, H2A, H2B, H2C, Y2D, FHX, F2A, G (1931-32) LB, LC, B3S, B3D, C3S, C3D,	1/4	1½	3½	0	53 (1926-31) 54, 54A (1927-34)	B <sup>1</sup> / <sub>16</sub> - <sup>3</sup> / <sub>16</sub> P <sup>3</sup> / <sub>16</sub> - <sup>5</sup> / <sub>16</sub> B <sup>1</sup> / <sub>16</sub> - <sup>3</sup> / <sub>16</sub>	1	$\frac{1\frac{1}{2}}{2\frac{3}{4}}$	81
FC, FB, FD, BG3, GD (1933-34)	3/6-1/4	1½	31/2		55 (1926-31)	P <sup>3</sup> / <sub>16</sub> -5/ <sub>16</sub> B <sup>1</sup> / <sub>16</sub> -3/ <sub>16</sub> P <sup>3</sup> / <sub>16</sub> -5/ <sub>16</sub>	11/2	0	0
PIERCE-ARROW 15T298, 17T361, 13S385	3/16	11/2	3	71/2	56 (1927-31)	B <sup>1</sup> / <sub>16</sub> - <sup>3</sup> / <sub>16</sub> P <sup>3</sup> / <sub>16</sub> - <sup>5</sup> / <sub>16</sub>	11/2	11/3	0
18W361, 19R479 24X479	3/16 3/16	1	11/2	8	58S, 58SS (1930-33)	B <sup>1</sup> / <sub>16</sub> -3/ <sub>16</sub> P <sup>3</sup> / <sub>16</sub> -5/ <sub>16</sub>	1 11/	3½	8
28M611	3/16	1	2	8	57 (1927-32)	B <sup>1</sup> / <sub>16</sub> -3/ <sub>16</sub> P <sup>3</sup> / <sub>16</sub> -5/ <sub>16</sub> B <sup>1</sup> / <sub>1-3</sub> / <sub>2</sub>	11/2	$\frac{2\frac{1}{2}}{2\frac{1}{2}}$	8
1B, 1D (1932-33) 1BR, 1DR, 2B, 2D, 2L	1/8-1/4	11/2	3/4 3/4 11/4	8	58·(1928-32)	B <sup>1</sup> / <sub>16</sub> -3/ <sub>16</sub> P <sup>3</sup> / <sub>16</sub> -5/ <sub>16</sub> B <sup>1</sup> / <sub>16</sub> -3/ <sub>16</sub>		23/4	8
2BR, 2DR 2H, 2J, 2K	1/8-1/4	$ \begin{array}{c} 1\frac{1}{2} \\ 1\frac{1}{2} \\ 1\frac{1}{2} \\ 1\frac{1}{2} \end{array} $	1 1/4 1 1/4	8 81/2	601, 602, 701, 702	P <sup>3</sup> / <sub>16</sub> -5/ <sub>16</sub> B <sup>1</sup> / <sub>16</sub> -3/ <sub>16</sub>	1	33/4	8
2HR, 2JR, 2KR 3H, 3J, 3K, 3M, 3HR, 3JR, 3KR, 3MR, 4H, 4J, 4K, 4M	1	1 1	11/4	81/2	618, 620, 621	P <sup>3</sup> / <sub>16</sub> -5/ <sub>16</sub> B <sup>1</sup> / <sub>16</sub> -3/ <sub>16</sub>		31/3	8
SCHACHT		1	172	072	641,642,643,64SW (1929-33)	P <sup>3</sup> / <sub>16</sub> -5/ <sub>16</sub> B <sup>1</sup> / <sub>16</sub> -3/ <sub>16</sub>	1	3½	8
<sup>10</sup> H, 10HA, 15H, 15HA, 20H, 20HA, 25H, 25HA		1		. 8	65, 65A (1929-33)	P3/16-5/16 B1/16-3/16	1	13/4	8
STUDEBAKER S20, S30 before serials 3401715					685 (1933)	P <sup>3</sup> / <sub>16</sub> - 5/ <sub>16</sub> B <sup>1</sup> / <sub>16</sub> - 3/ <sub>16</sub>	1	21/2	8
and 3425745 (1931) S20, S30 after serials 3401715	1/16-1/8		1/4-3/4		WILLYS-OVERLAND C101, T103, C113, C131, C157			1.0	7
and 3425745 (1931)	1/16-1/8	0-1	1/4-3/4	9	(1929-33)	. 1/8	2	1-2	1

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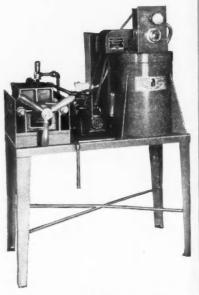
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Остовек, 1934





## Small



Above—A Miller oil purifer Left—Two Skinner reclaimers. Unit at far left is special small fleet model. Other is latest type with still to remove dilution

AN oil be reclaimed profitably in small quantities by small sized fleets?

Any number of fleet operators who have the drainings from 5 to 25 trucks to consider have pondered this question. The answer without a doubt is "yes." It is possible to make this statement because equipment has been designed especially to take care of the small fleet and there is equipment which both the small and large fleet can use.

Estimated operating costs of these smaller reclaimers are far below the cost of new oil but they are slightly higher than the costs which have been attributed to large fleets. The reason is that larger production naturally gives a lower cost per gallon.

To get an accurate estimate it is necessary to analyze all the cost factors. There is not as much experience from which to gather actual cost figures on the small reclaimers as there is on the large ones but with the kindred experience of the large ones and the bookkeeping of such fleets as have had a small installation long enough to give them some history, it is possible to arrive at estimates on small reclaimer operation that are acceptable.

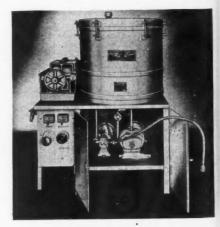
The results from the fleet operators

FROM the cost figures from three well known manufacturers of oil reclaimers the cost of reclaiming oil in small-fleet lots ranges from 5.7 cents to 23.5 cents per gallon.

In arriving at these costs a standard rate of depreciation of 10 per cent per year was used and the interest on the investment was figured at 6 per cent in each case. Electric power cost was rated at 3 cents per K.W. hour which is average. The difference in the cost is due mostly to the fact that in the case of one of the reclaimers the costs were based on operation at total capacity of 55 gal. per month while the other two were based on operation at 20 per cent of capacity. The lowest cost did not include the removal of dilution. It is obvious the cost of new oil is  $2\frac{1}{2}$  to  $3\frac{1}{2}$  times the cost of reclaimed oil. For literature on oil reclaimers check "A" on the postcard on page 74.

who have operated small equipment indicate that the cost of oil reclaimed is about 1 or 2 cents higher than when it is done in a large reclaimer. This puts it in the neighborhood of 9 to 11 cents per gallon. These figures are contradictory to some other estimates to follow. They are much lower. The reason for this difference is that ability to reduce the cost of operating any equipment varies with the operator and all operators do not keep books the same way. Probably the most important

Right-Another Miller oil purifer type



COMMERCIAL CAR JOURNAL

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## Fleets Can Reclaim Oil

Big Savings Are Made by Operators Who Reclaim Drainings at a Cost That Averages 1/3 That of New Oil

factor is the ability of the fleets to better the estimates on the large machines when put into actual service and to continue to do so on the smaller reclaimers.

In estimating the cost per gallon the first cost is, of course, the price of the reclaimer. The small sizes run from \$125 for an outfit without a still to remove dilution to \$395 for a reclaimer which will do everything and has a capacity of 4500 gal. per year. On the basis of 55 gal. to 75 gal. of drainings per month the depreciation amounts to 2.0 to 6.3 cents per gallon when depreciated over a 10-year period. Interest on the highest priced small machine

nall

y pe n amounts to 2.8 cents per gallon on 75 gal. per month when figured at 6 per cent.

Any fleet operator who knows his way around trucks can examine the reclaimers, and make a pretty shrewd guess as to what parts will wear out and how often they will need replacement. A question or two about parts prices and he can arrive at maintenance costs. Ten dollars per year is the estimate of one of the manufacturers.

THE time involved in operating and maintaining a small reclaimer is not sufficient to make it necessary to figure this item in the cost. It is probably less Reclaiming Facts and Figures From Fleets

Public Utility, Wisconsin. The cost of operating the reclaimer for current, cleaning clay, and blotters is nearly 3 cents per gal. We do not figure the labor costs as the Diesel operator takes care of the machine. The biggest saving is however, in the wear on the engines.

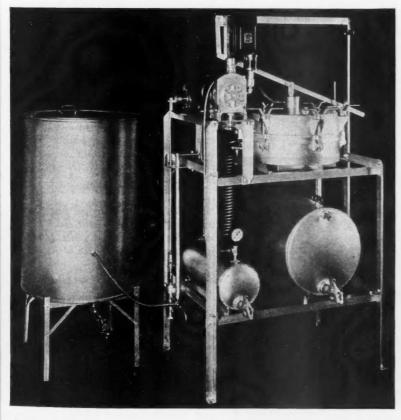
Taxicab Operator, Pittsburgh, Penna. Relative to the cost, we have estimated that the reclaiming cost has been between 5 and 6 cents per gal.

Wholesale Grocer, Baltimore, Md. We might mention that the buying of new oil has been reduced 40 to 50 per cent and that the cost of refining the old oil is about 10 cents per gal. The labor required is so small that it cannot be charged against the reclaimed oil.

Motor Freight, Baltimore, Md. We always were sold on the idea of using the best oil we could buy and therefore our saving per gal. on reclaimed oil is correspondingly high as it costs us only about 9 cents to reclaim a gallon of oil whether it cost 40 cents or 70 cents originally.

Motor Freight, Binghamton, N. Y. (15 trucks). We have used our reclaimer for the past year and would like to say that it has cut the cost of our oil one half

Hilco reclaimer designed especially for smaller fleets



Остовек, 1934

time than it now takes a man to dispose of the crankcase drainings.

Letters from owners who have had at least one year's experience with a small reclaimer substantiate this point. Some of them make a labor charge against the reclaimed oil and admit it is purely a bookkeeping charge. Others say the amount of labor is so small that they do not charge any labor at all.

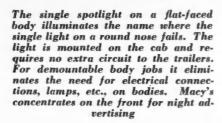
After depreciation, interest and maintenance materials have been charged up there is only one other cost factor left. That is electrical current. Three cents per k.w.-hr. is an average rate and at this average rate the current cost per gallon is 3 to 7½ cents. When the current cost varies from one community to another the cost per gallon will likewise vary.

A manufacturer who makes a reclaimer with and without a still to remove dilution estimates a cost of 11 cents per gallon without dilution removal and 18½ cents when it is removed. This is working at total ca-

(TURN TO PAGE 29, PLEASE)









Another night advertising medium is reflection, in which the other man's headlights furnish the illumination. Fruehauf uses it in a name plate using a single panel with white enamel lettering studded with reflector buttons. Kraft's reflector sign on the front and rear of the Badger trailer consists of individual raised letters, also studded, which stand out beautifully both day and night

Left corner—This unit operated by Dugan Bros. of Newark, N. J., has special, elongated lights with slot openings in their bottoms, mounted on a metal plate attached to the top of the body, and bent at an angle to direct the beams on the lettering. They are mounted front and rear, and have colored lenses which provide the running and marker lights required by law. A 6-volt current is obtained through a coupling from the lighting circuit on the tractor

## Let There Be L

SMALL fortune in advertising value is lost every night on the highways of the country by operators of truck fleets. All because fleet owners fail to realize that the common enemy-darkness-can be electrocuted by the turn of a switch.

During the daytime the truck has only to be attractive for its owner to get a lot of advertising value out of it. Like women, the better looking the truck the

more attention it gets. Beautiful bodies, attractive lines and colorful finishes get the public eye whether the object be a lightweight beauty or a heavyweight truck. The truck owner, with his name and the nature of his business prominently displayed on the truck, cashes

But in the night time the advertising message on the truck can't be seen without the help of artificial light. The fleet operator doesn't have to do it with matches. He has before him the examples of fleets that get the desired results with electricity or reflector buttons.

HERE are two principal features in night advertising that must receive consideration: the name or other advertising matter, and the source of illumina-

Ebling uses a spot light with universal adjustment mounted on the cab roof with its beam directed on the name on the front of the body. Lighting for this type of night advertising is cheap, requires no extra circuit to the trailer, is easy to install and maintain. Lighting is aided by a series of post lights on all sides

COMMERCIAL CAR JOURNAL



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By CLINTON V. BRETTELL

Supt. of Garages, R. H. Macy & Co., Inc., New York City



General Electric trucks operating between Schenectady and Philadelphia are equipped with a 500-watt bus-type generator, voltage regulator, two large bus type batteries and a 12-volt electric system to facilitate lighting for night advertising. Small headlights are concealed in the troughs above the words "General Electric" as shown clearly in the daylight photo. Control switches are assembled in switch panels in the cab and are provided with automatic circuit breakers. This illustrates one way the large side panel may be used for night advertising

## Light on Trucks at Night

Fleet Men Get the Best of Darkness With Special Lighting Installations That Make Trucks Good Ads At Night

EVERY fleet owner knows by now that a truck is an advertising medium. It is a "billboard on wheels," always on the streets where people can see it. It takes the owner's advertising message wherever it goes.

This advertising value comes easily during the daytime, but is lost during the night time unless something is done to lick the darkness.

This article discusses the different ways a truck can be lighted up at night to realize its advertising possibilities. The electrical problems involved are likewise discussed. A helpful article full of practical information.

The name or other advertising matter must be so located and colored that it will:

- Stand out sharply to the observer on the sidewalk or in a car. (Front is best position; rear, next best; sides, next. Some operators use all three locations.)
- 2. Easy and inexpensive to maintain at high efficiency. (Decals, gold or

silver, and shaded, and with an appropriate background, are very satisfactory for this purpose.)

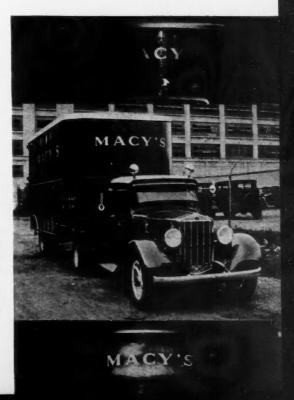
3. Be susceptible to maximum illumination with a minimum of expense for equipment, current, etc.

The source of illumination can be

The source of illumination can be either:

1. Flood lights mounted on roof of cab. This, of course, only pro-

Macy, New York City, uses spotlights with universal adjustment on the cab with beams directed on the name. The single spotlight on the round nose of the semi-trailer proves somewhat deficient by failing to illuminate the entire name evenly. The double spotlight overcomes this difficulty to some extent. These photos show the effects of single and double lighting with a daylight view of the mounting



Остовек, 1934

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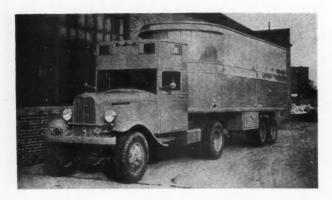
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Marmon-Herrington tractor with Fruehauf semi-trailer showing cowl around the trailer nose which serves as a trough for lights for night advertising



This Mack chassis, camouflaged by Gilmore, uses every possible element for good front and side night advertising: design, color and attractive modern lighting, and is paraded around at nights completely illuminated. It is being used strictly for advertising purposes. The Neon tubes will come off when the truck leaves stunt service for regular service

vides illumination for front of body.

Flood lights mounted on body. The cab flood light method has two possibilities:

 For Curved Front Bodies — Two lights at forward corners of cab give best result in uniformity of distribution of illumination.

 For Flat Front Bodies—A single, oval-type, colorless, refracting lens gives ample and uniform illumination. It reduces the cost of installation, maintenance and currentdraw.

The cab flood-light method has these advantages: Simplicity, low cost for installation, maintenance and current supply. Also, where the body is a semitrailer or demountable type, the necessity of complicated wiring, electric couplings, etc., is avoided (where source of current is on the truck chassis.)

It has the disadvantage of providing illumination only for front of body. If

sides and rear are to be illuminated, another method must be employed.

The lights must be firmly mounted, kept clean, and properly aimed and focused for desirable results. A control switch should be provided at a convenient location in the cab.

THE body flood light method has been employed, with various modifications, by a number of firms, who wished to illuminate all sides of vehicles. It is akin to the lighting of street bill boards and store showcases, with the marked distinction that in these the illumination is produced at 110 volts, whereas on the trucks only 6 volts or, at most, 12 volts are available.

This is a very considerable handicap as it necessi-

tates use of an increased number of lights. Also, as sign and showcase lights are all built for 110-volt systems, the 6-volt truck lighting equipment must be built specially (therefore increased cost) or adapted from something already on the market.

The advantages and disadvantages are just the reverse of those previously described in connection with "cab lights." Besides there are more lights, reflectors, etc., to care for with this type of illumination.

THE reflector method is practical and quite successful. Here on-coming lights provide the lighting-up power. Reflector signs simply consist of letters studded with glass buttons which reflect light. This type of sign may be used with practical success anywhere on the truck where on-coming lights are most likely to strike. Maintenance on reflector signs is negligible. It should be kept in mind that reflector signs only work part time

at night, that is, only when lights shine on them.

In regard to the electrical problems, the matter of wiring is no different from that on any truck. Care must be taken to see that wires are properly protected from chafing, short circuiting by water, etc.

There is one "kink" in connection with the wires between tractor and trailer that might be mentioned. That is, due to the changes in angularity between tractor-trailer, considerable "slack" must be left in the wires between these two units. This means that some method must be employed to keep these wires from chafing, as the angularity changes back and forth. The same thing is also true of the air hoses running between tractor and trailer.

Spring hangers or slings are provided for holding the hoses up out of the way, and by fastening the wires to these hoses by means of clamps, tape, or some other method, the same sling will serve to keep the wires from chafing also.

A NOTHER method employed is to use the "extension reel light" method such as is employed in parts stock rooms, where drop light wire is wound on automatic wheel, which coils the wire up when the drop-light head is released by the stock room man.

This same principle will keep the wire between tractor-trailer always taut, yet allow it to be drawn out when a greater length is needed, due to changes of angularity between the two vehicles. This method is employed by Dugan Bros., and while more expensive than the other, is reported to be very satisfactory.

The other method, we employ, and have always found it satisfactory.

The type of coupling for this wiring is also important. It should meet the following requirements:

Have sufficient number of circuits.
 Be positively locked, so it will not come uncoupled accidentally. A twist type coupling such as the Hubbell meets this requirement.

3. It should be water-proof.

 It should be sturdy in construction, so that it will require a minimum of maintenance and will have long, dependable life.

The more striking examples of these lighting effects and how they have been obtained are illustrated here. They show that the advertising value of rolling equipment on the road can be cashed-in on both night and day.

COMMERCIAL CAR JOURNAL

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## FRONT END ALIGNMENT LINES UP SAVINGS

(Continued from page 21)

side and gives the camber in degrees on a gage. A spirit level sort of arrangement is sometimes used with the gage at 90 degrees to the side that goes against the wheel. The tracks and rollers that measure wheel slippage also give the camber.

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It is possible to determine the amount of camber by setting a carpenter's square with one leg upright close to the wheel and the other resting on the same surface as the wheel. Then by measuring the distance from the felloe at the top of the wheel to the square and the distance from the felloe at the bottom of the wheel to the square you get the camber in inches. These measurements do no good unless it is possible to get factory specifications of camber in inches. In addition it is hard to get an accurate measurement with this method and the lower leg of the square must be level. Most garage floors would not do and a level plate is necessary.

CAMBER can be adjusted only by restoring the axle to its original specifications. That is by bending the axle back to the shape it was in when the axle left the factory. This is done with an axle press which usually consists of hydraulic jacks with the proper fixtures to make it possible to bend the axle at the right places in the right amounts.

Both caster and king pin inclination are measured by measuring the rise and fall of the spindle. Axle caster causes the right spindle to rise when the wheels are turned to the left and the left spindle to rise when turned to the right. The amount of this rise is recorded in several different ways upon the gages and the reading gives the caster in degrees.

King pin inclination causes the spindles to be at their high point when the wheels are in straight ahead position and to fall when the wheels are turned either way. The fact that these two factors cause the spindles to change levels at entirely different positions makes it possible to gage each by the rise and fall of the spindles without confusing them.

Caster can be adjusted by restoring the axle to its original specifications with the press or by inserting caster shims or wedges between the axle and the front springs. King pin inclination can be corrected only by pressing the axle back to its correct position.

While the four factors already mentioned are the most important in correct front axle alignment, wheel balanc-

ing is an important requisite of steering performance if the vehicle is to be driven at high speeds. The balance of wheels can be checked on fixtures made for that purpose and the actual balancing is done by adding weights to that part of the wheel which shows up light on the balancer.

Correction of toein, camber, caster and king pin inclination cannot be effective if steering connections are loose or parts such as king pins and bushings show excessive wear. Sagging springs and

misaligned and sagging frames have varying effects on steering and correction and adjustment of steering parts will not compensate for these faults.



Welded Products Co. reclaimer

## Small Fleets Can Reclaim Oil

(CONTINUED FROM PAGE 25)

pacity of 55 gal. per month. This manufacturer figured electrical current at 4 cents per k.w.-hr. which is 1 cent above average and depreciation is figured at 20 per cent or a complete write-off in 5 years. No allowance for labor was made for reasons already given. The cost of the unit is \$125 without a still and \$175 with a still. Another unit made by the same manufacturer gives a cost of 17 cents per gallon with dilution removed. The capacity of this second reclaimer is 210 gal. per month.

A NOTHER manufacturer with a reclaimer capable of 4500 gal. per year sets the cost at 191/2 cents per gallon when the outfit produces 75 gal. per month, which is about 15 per cent of its capacity. In this case 3 cents per k.w.hr. has been used as the current rate and the depreciation rate is 15 per cent. Labor to the extent of 3 cents a gallon has been figured in this total.

A third manufacturer shows on his cost sheet a gallon cost of 231/2 cents. A 10 per cent write-off for depreciation and interest at 6 per cent has been used on the capital investment. Labor at 2 cents per gallon has been allowed plus a fixed charge of \$10 per year for maintenance which runs the cost up on these particular figures.

If in mentally comparing these costs they seem to vary too much it is because we have not made entirely clear the differences in the methods of figuring. No matter what is allowed for labor cost, it is purely a theoretical cost.

And while we are perhaps quibbling over pennies we are passing up the value of all of these comparative costs. While the highest cost given so far was 231/2 cents per gallon and that only when all the cost factors that could possibly be amassed had been piled on, the cost of reasonably good new oil is about 50 cents per gallon. If a labor charge for operating a reclaimer is justified it would also be fair to charge a disposal cost on each gallon of new oil which would raise the cost of new oil. New oil, therefore, costs about 21/2 times the amount of the highest estimate of the cost of oil reclaiming, and 41/2 times the lowest estimate.

No attention has been given here to the comparative merits of new and reclaimed oil. There seems to be no point in adding words to that theme. Authorities say that reclaimed oil is as good as new oil. Chemists analyze samples and report the same thing and these reports have been proved correct by miles and years of service.

## A Safety Program That F



A driving test helps in selecting safe

[This plan was specially prepared by the National Safety Council at the request of Commercial Car Journal.]

PERATORS of large commercial fleets probably were the first to grasp the full significance of accident prevention work, since the financial element, as expressed in insurance rating, was more immediately apparent in the larger groups. The excellent results the large operators have enjoyed have naturally focused attention on the safety organization. The complexity of some of these organizations has in some instances created an impression that a safety program for a small fleet is impractical or too expensive because of the highly systematized procedure, operation and personnel, as evidenced among the larger fleets.

Fortunately, however, such an impression is false. Safety, even for large organizations, is simple in its fundamentals. Safety organization need be no more complicated than the demands of the business which it is intended to serve. The basic principles of a safety program, whether for a large or a small fleet, are always the same:

1. The management must take safety seriously and do its part by keeping vehicles in good repair and by using care in the hiring and training of drivers and by not imposing unreasonable schedules.

2. The management, having done its part, holds the individual driver re-

Tailored So That it Doesn't Cost a Lot of Jack and Won't Ball up Daily Fleet Routine

## SAFETY SAVES SHEKELS

SMALL fleets, according to safety experts, are paying heavily through the nose for accidents in traffic. Judged by the stream of blood-money that flows through it, the nose is bigger than Jimmy Durante's schnozzola by a good many nostrils.

And the pity is that it's practically all a waste that can be stopped.

The answer is safety organization. And this article proves that an accident prevention program will not interfere with regular fleet routine in even the smallest fleet.



Careful instruction as to the aims of a safety campaign puts the driver right at the outset

sponsible for accidents, or rewards him for a clean record.

In the small fleet, the president or manager can personally deal with drivers to see that vehicles are kept in safe condition, that competent men are employed, that the drivers are instructed in working practices, that they report even minor accidents, and that they drive only when fit, and that they observe road courtesy. In other words, either of these officials can take upon himself the responsibility for the ef-

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fective working out of the safety program.

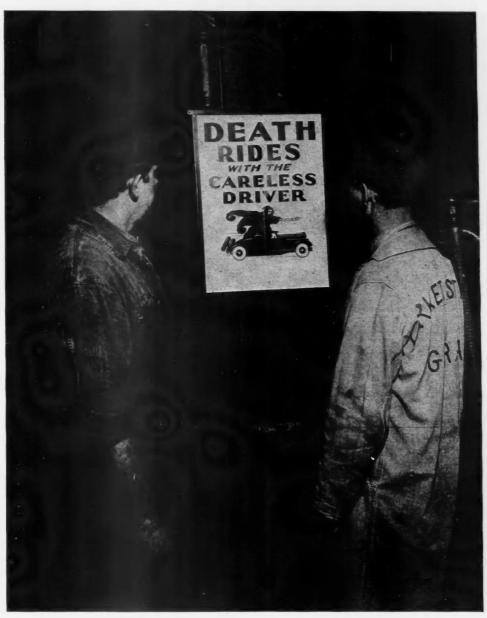
A safety committee has a unifying effect upon the personnel. It need not be a complicated affair. The superintendent or manager should be chairman, while the garage foreman or mechanic and one or more drivers are members. The chairman must encourage free expression of opinion from subordinates and must make them realize that he sincerely wants to reduce accidents and is willing to cooperate fully. It is advisable to change the driver members at least every three months, thus permitting each driver to feel that he has a part in the active accident prevention work and a chance to express himself.

At the beginning of the campaign, the National Safety Council recommends that the Safety Committee meet at least once a week until the activities are well under way, and afterwards, at least once a month.

The National Safety Council has estimated that about 85 per cent of motor vehicle accidents are due to human failure, while 15 per cent are due to mechanical defects. On the basis of these figures, it will

be seen that the careful and skillful selection of drivers is most important and effective in safety work. The manager or superintendent should do this himself. Fleet operators who can, usually prefer to train drivers from the beginning, sometimes starting them as driver's helpers. This can be practical in small fleets and in more than one instance it has been done.

THE Council recommends these steps in the selection of drivers for small fleets:



Death takes a holiday for safe drivers operating under a safety program

1. Medical examination to detect physical or mental deficiencies. If not available for all drivers, it should at least be done for all doubtful cases. An eyesight test is desirable for all applicants as a part of the medical examination, or separately.

2. Investigation of driver's record through inquiries of previous employers, or, reference to police records of accidents and convictions.

3. Determining whether applicant can meet legal requirements as to chauffeur's license, bonding, etc.

4. Road test in which driver demon-

strates how well he can handle a motor vehicle. While easy to give, this test often reveals unsafe or careless driving practices which will have to be corrected by training.

5. A written test on driving practices, etc., sometimes may be used to advantage. To a certain extent it is a thoroughly good gage of the intelligence of the driver.

6. A period of probation, during which undesirable traits in the river can be detected should they have escaped notice during the employment interview.

(TURN TO PAGE 48, PLEASE)

Остовек, 1934

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. . It's pie when you know the tricks . .



. . Jack Crumpt (watching) tells his assistant . .

## Synthetic Enamels Give

Cure for Peeling

By A. J. Chronister

West Phila. Auto Top & Body Co.

Synthetic enamel has been used in our shop for some time now. It does a fairly good job and permits us to turn out a job in rapid time. Trucks should have a new finish about every 18 months, with a strip-down job, although occasionally a job may be done over the old finish. We do that but once because that's all the enamel will hold.

Our first experience with synthetic enamel gave us trouble with peel and tack. When it first happened we were at a loss as to what to do. By a little experimenting, however, a solution has been found. At least we no longer have that trouble.

"Peeling" we found to be due to poor primer or primer not suited for the surface which we paint. Prepared primers invariably cracked and the finish would come off in sheets. To overcome this difficulty, we use a primer mixed in the shop from white lead and turps and a little color. What this primer really amounts to is an old-fashioned lead paint job for the first coat. Since we



SYNTHETIC enamels have had such a complete acceptance among truck fleets that Commercial Car Journal has gone into action to line-up opinion as to how this material may best be handled in the shop.

We are glad to present here practical dope from experienced fleet men on how they lick the problems which plague the painter who uses synthetic enamels.

If you want booklets on synthetic enamels, write to the editor.

have been using this primer we have never had trouble with cracking or peeling, and we are getting a more satisfactory job.

Primer, however, is not the only cause of peeling. Frequently this con-

dition may be caused by improper treatment of the surface of the metal after using a paint remover. The peeling is due to the continued action of the particular paint stripper used in removing the old job. The difficulty here is that

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### THE TRICKS ARE THESE "DON'TS"

1. Don't try to save with a cheap primer. It causes peeling and cracking.

Don't do a careless job of rinsing paint remover from metal. Look for paint failure if you do.

3. Don't go over a tacky surface. Remove paint if not dry in 24 hours.

4. Don't paint where there is a draft or dust. Protect the truck from moisture and allow more drying time in damp weather.

5. Don't fail to use both a primer and surfacer even when going over an old job.

6. Don't paint over a rusty surface. Use a chemical wash to remove rust or the job will peel.

7. Don't paint over grease. Use a pumice powder wash and a lint free cloth to remove grease.

The above "Don'ts" are picked from the articles by A. J. Chronister, West Phila. Auto Top & Body Co.; Jack Crumpt, Miller North Broad Storage, and Fred Weeber, General Baking Co., which appear on these pages and which are filled with practical information.

## **Magic Results**

And Here Fleet Painters Pull Out of Their Sleeves the Only Tricks That You Need to Know

after using the paint remover, the surface of the metal isn't washed completely or carefully. The paint stripper we use is water soluble and a water wash removes it completely. Should anyone try a gas or turp wash, as we did once, the new job will come right off

Stripping a job is an important part of painting. In view of the fact that many refinishing jobs are done at the same time as motor work, stripping becomes easy. With the motor and wheels removed, the unit may be placed off by itself in a corner of the shop. It is then sprayed with a watersoluble paint remover. If this remover is used at a temperature of 160 deg., the job will take 30 minutes. A satisfactory job can be done with the remover, at a normal temperature, in about two hours. The equipment so treated is then hosed carefully with clear water to remove all traces of the paint remover. After this treatment we are ready to apply our primer and enamel. No job so treated has as yet failed.

Peeling of synthetic enamel is sometimes caused by using the wrong pressure in the spray gun. Of course, there's no particular trick to overcoming this except proper gun adjustment.

SEVERAL things we do on the painting job saves us time and money without affecting the finish. On repainting over an old job we sand down the old finish and then apply a coat of thick glazing putty with a broad knife. (The usual method is to use it thin as a surfacer.) By applying it thick it serves as a filler and surfacer in one operation, thus eliminating one of the necessary two coats of surfacer.

Another little trick we practice here is to use S.O.S. filler under the ground coat. We mix this powder with turps and apply it with a camel hair brush to eliminate any possible unevenness.



. . and watch the weather, Fred Weeber warns . .

Then the enamel will never peel. Even a torch won't remove this filler.

Around the engine and the chassis frame where it usually is the practice to use a primer and then two coats of black enamel, we use a primer, one coat of black lacquer and then one coat of the black synthetic enamel. This is something I do on my own initiative because I think the material holds better.

COMPLAINTS that synthetic enamel sometimes remain tacky may be laid (TURN TO PAGE 68, PLEASE)

Остовек, 1934

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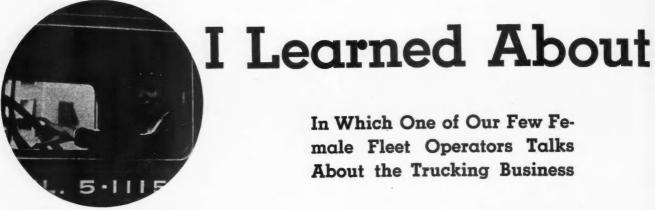
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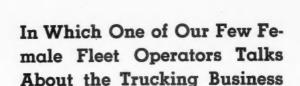
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. . she prefers to be driven



By STANLEY GERSTIN



Fleetwoman Libe prepares assignments for her drivers in the early morning hours and Katherine (pinch-hitter in charge) calls them out in late afternoon

Advice to Women That Men Can Take



WOULD give the following advice to a woman going into the trucking business.

"She must have NERVE and learn to do without sleep.

"Buy trucks from a manufacturer who will stand behind his product.

"If you know nothing about trucks tell the manufacturer what you expect to haul and take his advice on the type of truck to use.

"Hire good men. Pay them fairly. Treat them well.

"Keep cost accounts and always work at a fair profit.

"Give dependable service."

HIS was one of the few women truck fleet owners in the country, operating 16 trucks from Phillipsburg, New Jersey. She was dressed in a neat black hat and suit. The smoke of a cigarette, held loosely between her fingers, curled slowly upwards. She looked attractive seated at her desk.

"A story about my business, really! There was someone here before youseeking something about my being a truck driver. I am not a truck driver, you know. I am a fleet operator. I can drive a truck if I need to, but I dislike truck driving. I'd rather do housekeeping."

The present Mrs. Emily B. Libe really found herself face to face with the world for the first time at the age of 18. It was a reckless age and recklessly she announced one Saturday afternoon that she was going to get married after attending a football game. She did.

Shortly afterwards Husband Libe lost his job. "Have you ever tried working?" an uncle said to her. It was a broad hint. Emily B. Libe went to work and has been in business ever since.

Today she is owner and operator of the Libe Auto Transfer—has been for six years and claims 16 years of trucking experience. It began when she landed a job as bookkeeper for a fleet operator. Prolonged absences of the owner forced upon her the necessity of learning and managing things on the inside. She did so good a job of it that when another Phillipsburg operator ran short of help, he asked to borrow her



.. and to bake cake

for two weeks. She stayed 10 yearsand then bought out her bosses.

THE facts are that the owners wanted to sell, and requested their efficient office manager to try her hand at disposing of the business. She cornered a prospect and painted the business as being such a honey that he turned upon

COMMERCIAL CAR JOURNAL

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## Trucking From Her

her and said, "If the business is so good, why don't you buy it yourself?" She did.

So Fleetwoman Libe took over the assets or liabilities (however you wish to look at it), 12 small trucks doing a local hauling business, about a dozen employees, a daily headache and a severe case of nervous indigestion. For two months afterwards Operator Libe could be seen daily going to and from her business without arousing the slightest suspicion from Husband Libe that it was his wife's business.

"I was afraid to tell him," said Mrs. Libe.

FRIENDS and others said she was "simple" and that she would quit at the first slap. To date she has taken many slaps but hasn't quit, and if she had to do it over again, "I would if for no other reason than that I feel that it is something vital; something that gives men work. Anyway, I love to take up what others cannot finish and complete the job myself."

After two years of hard work, she was offered \$35,000 for her business. The didn't take it. Partly, the writer a spects, for sentimental reasons—"The sight of my trucks leaving at four in the morning thrills me."

What then, is the full day of an operator who sends her trucks out at four in the morning and is there to see them off? Here is a typical day in the life of Mrs. Libe. Five to eight hours driving on the road on business trips, spends four to five hours at the office



Emily B. Libe

". . I believe the trouble with the industry is the men who are in it. They are simply bowled over at the thought of putting pencil to paper."

Left-Some of her "boys"

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usually at night from 10 p. m. to 2 a. m., sees her trucks off at four, then home for about four hours sleep. The remaining hours out of the conventional 24 are spent washing, cleaning, cooking (she loves to cook), an hour or two reading or pie baking, and a stroll with her dogs.

W EEK-ENDS are spent at her summer camp at Foul Rift, N. J., on the Delaware River, 12 miles out of Phillipsburg. For company at the camp there are usually three or four of her employees' children who manage to enjoy themselves. Several remained there all summer long. (Another thing which her men appreciate.)

And this interesting woman, moving confidently among the many difficulties attached to the trucking business prefers to stay home and bake cake! She loves animals, children and flowers. She likes her drivers whom she calls "her boys," likes their children who call her "mother," and although she can drive as well as any woman, she would much rather be driven!

### The Men

HoW does this personality handle her men?

No trouble is encountered in handling men. Mrs. Libe familiarizes herself with the habits of drivers and helpers, where they live, the condition of their families, their health, their finances, and their needs. Her men are fit "morally, mentally and physically."

She has had college men working their way through nearby Lafayette University as drivers and helpers. For a time a minister, out of his regular profession, drove her trucks.

Good men save operating expenses and the reason the employees are at their best becomes apparent upon closer study. The interest shown by Mrs. Libe in the families of the men is one reason, another is that she frequently does favors for them, helps them financially, lends them her car, feels responsible for their welfare. Her attitude was well expressed when she said, "People who think that when you are in your own business you are working for yourself are all wrong. When you have employees to provide for, is the time you are really working for others."

MALE employees like to work under her. In all six years of experience as an operator only one man could not work for her. In true Prussian fashion, he said, "You are a fine person, but I simply cannot work for a woman!"

"I think I am fair with the men," says Mrs. Libe. "Whenever a driver grumbles or thinks I am making too much money I take him into the office and discuss operating costs. Invariably I find that he hasn't the faintest idea of what it costs to run this business. Operating costs and my financial responsibilities are fully brought to his attention. This frank treatment usually serves to settle his mind on certain vital subjects."

The men are taken out to dinner about twice a year. These are "get-it-off-your-chest" dinners where they tell Fleetwoman Libe what they think of her and she reciprocates in kind. Hers is the loudest voice.

THAT the drivers and helpers know their employer well was shown when a driver who had been fired returned to see Mrs. Libe and asked to be taken



For relaxation: A few minutes stroll with her dogs

back. He came fortified, however, with the person of his little son. Woman and boy hit it off great. The driver was rehired, and given another chance. "CTATE control of trucking has made such a mess of the trucking business that I am ready to concede that perhaps Federal control would be a boon to the industry. One of my trucks recently made a long trip South and I had to buy a state license just for that one trip. I don't know when I'll make another. Federal control whereby an operator would pay, say, 10 per cent of the cost of the state license each time he goes through the state would be more equitable. Then we could either buy a license or pay the fee."

Mrs. Libe believes that truck drivers are perhaps the best drivers in the country. They have to be—they are picked for the job because they are good drivers. "Accidents are caused chiefly by passenger car drivers and particularly the week-end driver who takes his car out on the road once a week to go some place and is in a terrible hurry to get there."

## Operation

TODAY she operates the business with 16 trucks having capacities from 4 to 12 tons, including one semi-trailer of 18 tons; employs approximately 30 people, which includes helpers, drivers, mechanic and office staff—has never cut their pay and has shown a profit for every month of operation in the past five years.

Rates are just half of what they were under the old ownership, business has doubled, operation costs are down, and profits are up. Hauling is done by contract for local silk mills, steel mills, chemical plants, etc.

Freight consists of 10 per cent heavy machinery and equipment, 10 per cent iron and steel, 40 per cent chemicals and 40 per cent general. Hauling is both local and long distance, from Phillipsburg and Easton (just across the Delaware River) to New York City,

(Turn to Page 86, Please)

COMMERCIAL CAR JOURNAL

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## New Products on Parade

## Descriptions of the Latest Items Put on the Truck Market by Equipment and Specialty Manufacturers

## **Pedrick Piston Ring**

A NEW type Deep-Channel Pedrick oilcontrol piston ring has been announced by Wilkening Mfg. Co., Philadelphia. The side walls of the continuous channel are undercut so that, as wear takes place, the face area of the ring is reduced, thus



Deep channel Pedrick ring

tending to maintain the unit pressure against the cylinder wall and compensating for loss of tension caused by wear.

The shape of the channel is such that sharp acute-angled scraping edges are provided to cut into the oil film on both the up and down strokes of the piston. Furthermore, the "V" groove shape of the channel creates constant turbulence in the oil, preventing carbon accumulation. Surplus oil can be collected from the cylinder wall very quickly due to the extra depth and capacity of the continuous channel.

Round holes, spaced closely and evenly around the ring are drilled without distortion of the shape of the ring and permit the Deep Channel ring to be made perfectly flat on both sides. The diameter of the round holes exceeds the width of slots used in rings of the same size.

## **Gun for Striping**

THE operator of little experience can now stripe with their new UAA or UBB guns, the Paasche Airbrush Co., 1909 Diversey Pk'y, Chicago, says. Either gravity or pressure feed may be used.

## **Wesco Triple Grip Chains**

THE new Wesco triple grip emergency chains have three cross chains instead of the usual two, providing smoother riding, more traction and longer wear. They can be snapped on quickly. The improved buckle takes up the slack and holds the chains tightly in place. The patented finger construction prevents turning around tire. The cross chains are case hardened and can be replaced with standard cross chains. The weatherproofed strap is strong and durable. Manufactured by Western Chain Products Co., 1803 Belmont Ave., Chicago.

## Storm Boring Bar

THE largest portable Fly Cutter Machine manufactured—is the way the Storm Manufacturing Co., Inc., 405 Sixth Ave., Minneapolis, Minn., describes their new model N-K boring machine. It is designed especially for trucks, marine engines, road graders, etc.

The spindle has three speeds changing from one to the other by moving one lever. Will take any bore from 3½ in. to 7½ in. It is equipped with a positive screw feed engaged through the use of a split nut eccentrically operated. The bar is made of hardened steel ground to within 0.0001 in. for roundness and straightness. The high speed spindle is mounted on tapered



Fly cutter for boring

roller bearings. The machine has power to remove ½ in. of metal from a 6 in. cylinder. The cutter is Tungsten carbide.

## Piston Expander and Stabilizer

THE new improved type Pedrick piston skirt expander and stabilizer, just announced by the Wilkening Mfg. Co., Philadelphia, Pa., is curved and formed from flat Swedish spring steel. Lugs are provided at each bend in the spring and these lugs engage the groove which is milled in each side of the piston slot, holding the



Skirt expander and stabilizer

expander in place and preventing it from touching the cylinder wall. These lugs carry none of the expansion force, which is all carried directly by the flat surface of the spring.

No change has been made in the effective principle on which the expander works nor in the method of installing. Expansion is applied the full length of the skirt and with equal radial force outward. The piston skirt is restored to its correct size. Piston "flutter" is stopped. Practically no weight is added to the piston so no balance is upset. One size fits all pistons.

## A Handy Spray Gun

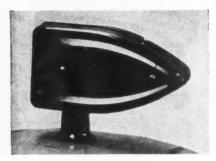
THE new No. 5 spray gun being produced by the H.D.B. Corp., 900 N. Spaulding Ave., Chicago, Ill., is a well balanced gun having all the moving parts constructed in one line to eliminate off-side pull. The nozzle produces a very highly atomized break-up of material with reduced forward speed of the spray. This speed is reduced to the extent that a noticeable portion of the spray mist is eliminated. The gun is for general use.

## **NEW PRODUCTS ON PARADE**

## **Turn Signal for Trucks**

THE Turnsignal Corp., 400 E. Rittenhouse St., Phila., Pa., have produced a heavy duty, illuminated turn signal device for truck use. The signal consists of four individual lamps. The pair for front mounting have illuminated pointers front and rear and hollow bolt mounting which makes them practical for fender mounting. The lights for rear mounting have almost universal brackets of sturdy design. The amber color of the directional pointers is provided by special lens and a sympathetic color on the interior of the lamp.

The heavy duty truck set has a pilot in the form of a sound device which warns the driver when the signal is illuminated. Gaskets are held in place by plates bolted to hold the lens, making the lamps dust and moisture proof. Very little glass is exposed, eliminating breakage by stones or other outside agencies. The switch is



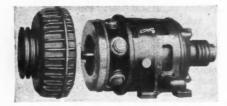
Signal for heavy duty trucks

the double knife, self-wiping type. The construction of the whole unit is heavy enough to make it durable in truck service.

## Refrigerating Power Unit

A NEW dynamic drive power unit for truck refrigeration systems has just been announced by the Louis Allis Co., Milwaukee, Wis.

The unit is a combined speed-controlling power transmission and A.C. motor for use in the conversion of variable speeds produced by the truck engine to the correct speed for operating the refrigerating compressor on a moving truck and to continue the power when the truck is in the garage by connection to the regular A.C. power line. There is no mechanical connection between the driven member and the driv-



Power unit for truck refrigeration

ing shaft of the drive. It is power take-off to belt driven and it uses very little current from the regular 6 or 12-volt battery.

## Stabilizer Reduces Shocks

THE Bordik Floating Stabilizer, made by the Zink Bordik Products Co., Detroit, Mich., is easily installed. The shock from vibration and loose connections is absorbed by this device and end play is eliminated with the result that repair bills are cut



Bordik shock stabilizer

and tires and brakes last longer, the company says. The Stabilizer dampens out the shocks of starts and stops and road holes with an idle resisting pressure of 1800 lb.

### FREE FOR THE ASKING

CATALOGS are available on the following subjects. If interested, just address the Editor, Commercial Car Journal.

Information on a complete line of air compressors and car washers made by the Worthington Pump and Machinery Corp.

Data on a new cleaning compound for cleaning parts, engines, chassis, etc., which is supplied by the Magnus Chemical Co.

Samples and catalog on a new top decking material which the Textileather Corp. will send you.

Descriptions of new refrigeration units for truck bodies in detail. Made by the Louis Allis Co., and Kold-Hold Mfg. Co.

Illustrations and descriptions of a device which when installed cuts repair costs by absorbing vibration, road shocks, etc. The unit is described by Zink Bordik Products.

An illustrated brochure describing truck tanks and installations for bulk hauling by the Farrell Mfg. Co.

Just clip this and ring the catalog you want. Give the editor your name, address and company connections.

## Pedrick Ridge Reamer

THE Pedrick ridge reamer consists of a heavy shaft on which are mounted two plates, a cutter, an adjusting screw and an operating handle. One plate rides against the cylinder block. The edges of the other plate ride against the cylinder wall below the ridge that is to be removed. The adjusting screw at the lower end of the shaft is set so the shaft is vertical when the round headed nut is riding on the cylinder wall opposite the cutter. The cutter is adjustable for the depth of cut which is usually .005 to .010 in.

Removing the ridge is accomplished by working the handle of the tool so the cutter travels around the cylinder with a slight pressure on the cylinder wall. It will



Pedrick ridge reamer

take any cylinder from 25% to 5 in. bore. The reamer is offered for \$3 by the Wilkening Mfg. Co., Philadelphia, Pa.

## **Met-l-wood Top for Trucks**

THE Met-l-wood Corp., 6755 W. 65th St., Chicago, has developed a process which makes it possible to supply body tops of metal and wood veneered panel in special shapes.

To accomplish this result the truck top is fabricated as a separate unit and not attached to the body sides until it is completed. The steel roof rails are formed from straight steel sections. The front and rear drop curves are shaped the usual way. That is cutting, bending and re-welding. The roof rails and carlines are fastened to the panels by means of a patented use of split rivets, a method which has proven superior to solid rivets or bolts and screws.



Met-l-Wood top for special bodies

The Met-I-wood panels give all the advantages of a metal roof without the disadvantages of noise and high heat conductivity.

COMMERCIAL CAR JOURNAL

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## **NEW PRODUCTS ON PARADE**

## Skinner Oil Filter

SEVERAL models of the new streamline oil filter have been developed by Skinner Motors, Inc., Detroit, and now each type of equipment can be furnished with or without a still. The filters and stills have been made in a range of sizes to meet the requirements of operators of from 5 to 500 trucks. They are illustrated on page 24.

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## Rubber Rear Vision Mirrors

HUNTER AUTO EQUIPMENT CO., INC., New York City, has made "Neverbreak" rubber-mounted mirrors a standard product of the company. They have a flexible rim permitting the use of replacement refill mirror plates at low cost. These refills are not backed with copper paint, but hermetically sealed electrolytically with a deposit of pure copper, insuring freedom from spoilage and turning black.

## Prest-O-Lite's 4-in-1

INDE AIR PRODUCTS CO., 30 East 42nd Street, New York City, has made an important addition to its Prest-O-Lite line of equipment for soldering, brazing and heating. The new 4-in-1 Prest-O-Lite outfit differs from the 5-in-1 outfit in that four stems instead of five (the soldering iron is omitted), and a durable, waterproof fabric carrying case, instead of the heavier metal case, are offered at a lower price.

The four stems cover: fine soldering such as that used by jewelers, toy manufacturers, telephone repairmen, and for exact heating operations on delicate instruments; light soldering, brazing and heating, as for making soldered wire splices, and for auto, truck and tractor radiator work; medium soldering, brazing and heating, ideal equipment for sealing batteries, burning cable lugs and for all average open flame work; and heavy soldering, where the torch must furnish a large volume of heat sufficient for bending rods, etc.

## U. S. Electric Lift Pump

THE United States Air Compressor Co., Cleveland, Ohio, has a new electric lift pumping unit compactly made of nitralloy steel. The top casing cover is secured to

the tank by screws and the whole unit is quickly removed for tank cleaning. Motor switch and container are enclosed, proof against weather and water. Pump bearings are roller type.

As the lift of a pump depends upon the cleanliness of the oil, U. S. has provided a fine mesh intake screen, mounted in a vertical position so that par-ticles of dirt will not lay on the screen but will drop down to the

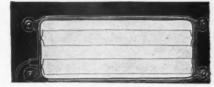


Electric Lift Pump

bottom of the oil container. The unit has a 2-hp., low-speed motor, 1725 r.p.m.

### Casco Shield Defroster

THE Casco No. 50 defroster and sleet remover consists of a chromium frame. four heating wires, glass, size 18 x 7 in., four large cups, illuminated dash type switch and a tube of adhesive. Replacement parts for this unit are available. This device made by the Casco Products



Shield Defroster

Corp., Bridgeport, Conn., will prevent condensation as well as melt ice and snow on the windshield.

## Marquette Flusher

IT is possible to see the progress and results of a cooling system flushing job when done with the new Marquette Flusher by looking through the Pyrex glass in the tank and in the hose. The flow direction of the cleaning solution can be changed every few minutes by means of a two-way lever. A control switch is now provided and the pump inlet screen can easily be removed for cleaning. The entire machine



Cooling system flusher

is mounted on rubber and the carriage has rubber tires in the front and rubber insulated feet on the rear. Marquette Mfg. Co., Minneapolis, Minn.

### Glazoil Lubricant

GLAZOIL is a new colloidal graphite base concentrated lubricant, reducing the need for oil changes. It also reduces friction and resulting wear by depositing a permanent film of lubrication on all wearing surfaces, "glazing" each wearing part. This "glaze" or "film" causes oil to spread or "wet" much faster. It assures proper "running-in" of new motors, will not burn, freeze or break down regardless of the operating conditions. Made by The Glaz-oil Products Co., 1614 Coutant Ave., Cleveland, O.

## Fitzgerald Gasket

THE Fitzgerald Mfg. Co. has a new Bulldog high compression heavy duty gas-ket in production. The top and bottom surfaces of this gasket are made of copper. Next to these surfaces a regular thickness of high-grade, long-fibered asbestos sheet is placed, thus providing two thicknesses of asbestos instead of the customary one. Between the two sheets of asbestos, there is a metal insert fastened with pronged barbs.

## **Break Proof Zero Tester**

A NEW breakproof flexible float for testing radiator anti-freeze solutions has been developed by Edelman and Co., 2332 Logan Blvd., Chicago. It is not affected by heat or cold and is non-absorbent and noncorrosive. The stem of the float which contains the graduated scale is made of clear glass and is locked to the float body by a flexible connector. This forms a breakproof point where breakage occurs.

## Tints for Truck Finishing

DURAL tinting unit No. 9, introduced by the Sewall Paint & Varnish Co., Kansas City, Mo., is an assortment containing all tinting colors necessary for completely formulating 90 per cent of the colors used in automobile refinishing. It enables the refinisher to economically tint colors for exact matching in spot work.

## **Bear Caster-King Pin Gage**

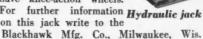
BEAR MFG. CO., Rock Island, Ill., has developed an improved model of the Bear caster gage with provisions for checking the king pin angles besides caster of all passenger and commercial motor vehicles.

The gage checks both caster and king pin angles. To find the backward tilt of the front axle or knees (caster) this instrument gages the rise and fall of the To determine the correct outward slant of the king pin, measurements are likewise taken from center line of tire.

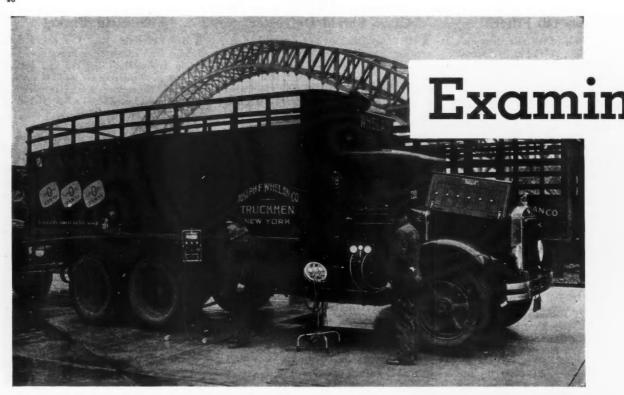
## Blackhawk Hydraulic Jack

BLACKHAWK MFG. CO. announces a new hydraulic jack designed especially

for Chevrolets and Pontiacs with knee - action wheels. The L-8 by Blackhawk is 8 in. low, has a double telescope lift of 11 in., giving a full top height of 19 in. Capacity 2000 lb., and sufficient for all passenger cars and light trucks. It weighs only 15 lb. and is ideal for service stations, fleet operators, and garages that are servicing these new car models which have knee-action wheels. For further information Hydraulic jack on this jack write to the



**OCTOBER**, 1934



Economy examination with Engelhard equipment

O much attention has been focused upon fuel consumption recently that some of the larger shops have installed gas analyzers and some of the gazoline companies have made analyzer service available at filling stations. Larger fleets have added gas analyzers to their equipment and it is a safe prediction that many more fleets will soon be using these instruments.

There are reasons for suspecting that the results obtained with the analyzers in the hands of some users to whom the instrument is new, have not been uniformly successful. This is undoubtedly due to the fact that these operators are striving for fuel economy only, and consequently disregarding all other factors.

THIS brings out the point which all manufacturers of gas analysis equipment wish to make clear. That is, that a gas analyzer is of definite value to a mechanic who has been trained to use it if he has enough mechanical background to take advantage of his findings. It is not a foolproof device which will permit unskilled men to replace mechanics on the important phases of engine tuning, nor will it be particularly beneficial in guiding the inexperienced or unskilled workman in attempting to do work that is over his head.

Operators using exhaust gas analyzers should never lose sight of the fact that

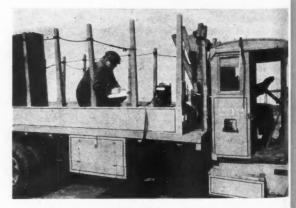
maximum economy and maximum power occur at two widely separated points. To get the full measure of one you obviously have to sacrifice some part of the other. The best setting that can be obtained is a compromise. It gives a maximum of economy that can be obtained without an appreciable loss of power. Better fuel economy can be obtained, but with it comes the loss of power at normal operating speeds. With this loss of power comes trouble with spark plugs, valves, pistons and piston rings. This trouble will show up on the budget in larger figures than will the saving in fuel.

Skipping the involved chemistry of the fuel mixture and combustion we find that too

lean a mixture releases large quantities of free oxygen. It is a belief that a lean mixture causes the engine to run hotter. The reverse is true. But it is the free oxygen that causes the trouble. At ex-



Engelhard exhaust gas analyzer



Reading a Cambridge exhaust analyzer

haust gas temperatures this free oxygen readily combines with materials, such as cast iron, which is used in engine parts. The result of this combination is much the same as ordinary burning.

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## the Exhaust for Economy

Gas Analyzers Are the Scientific Bloodhounds That Take Up Exhaust Scents and Turn Them Into Savings

### SCENTS TO CENTS

EXHAUST gas analysis is a maintenance procedure of definite value to every fleet. Scientific instruments are available to do this job efficiently. Some degree of skill and training are required to operate advantageously.

Mixture settings are at best a compromise between power and economy and the gas analyzers enable the operator to realize the most economical safe settings for work his trucks must do.

When striving for operating economies it should be remembered that an analysis made with an engine idling at any speed does not give the same result as an analysis of the same engine under load. Since the reading is an average of all cylinders, it is possible to work to closer limits on trucks with duplex or double manifolds or carburetors.

For all available information on exhaust gas analyzers check "B" on postcard on page 74.



When the mixture is rich, hydrogen is present in the exhaust gases. The gas analyzer is made to show a rich mixture when hydrogen is encountered in the analysis. Carbon dioxide is always present in the exhaust gas but in a lean mixture the amount is larger. When carbon dioxide in excess of normal is present the analyzer shows it by the needle registering on the lean side.

Leaking valves or piston rings will show up on some of the gas analyzers when the needle fluctuates in the rich range. When the piston comes up on the compression stroke the temperature of the mixture in the combustion chamber is raised. This is due, of course, to the fact that the gas is being compressed. Leaking valves or piston rings will lower the compression pressure by permitting some of the gas to leak out of the combustion chamber at that point. Lowering the compression pressures amounts to lowering the temperature of the mixture. In addition to lowering the temperature, leaking valves and rings lower the vacuum efficiency, thereby changing the characteristics of the gas completly. The result is a weak explosion and all the



Cambridge exhaust gas tester



Weidenhoff gas analyzer hook-up

hydrogen present is not burned. Varying quantities of it get into the exhaust and the needle fluctuates into the rich range.

F AULTY ignition will be indicated by fluctuations of the needle in the lean range. A spark plug misses due to a faulty plug or some other part of the ignition system. Some part of the combustible mixture breaks down due to its contact with the hot engine parts but a large porton of it gets into the ex-

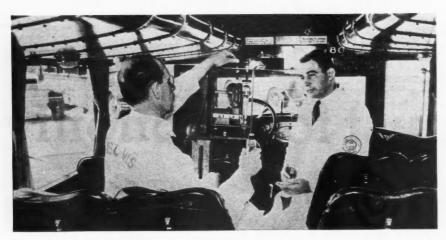
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## EXAMINE THE EXHAUST FOR ECONOMY



Hays gas analyzer

haust and the analyzer intact. Then the needle fluctuates in the lean range since raw gasoline gas has essentially the same heat conductivity as air.

Obviously if the float level in the carburetor is too high, the fuel will spill over the jets and a rich mixture will be recorded no matter what adjustment is made. Similarly if the float level is too low the reading will be lean.

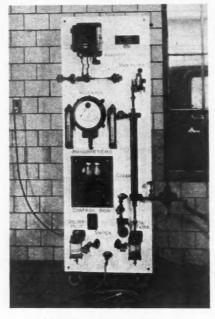
Very often truck mixtures are deliberately set rich because of frequent starting and stopping. The operator who does this is laboring under a mistaken impression that it is necessary to get more power. In cases of large overloads it may help some to operate with a rich carburetor but at best a large amount of gasoline is sacrificed to give a relatively small increase in power. An attempt to compensate for overloading by changing the carburetor mixture to the rich side is usually a pretty expensive process.

The gas analyzer can bring to your attention in dramatic fashion just what you are doing but you cannot expect it to help you beyond that point.

The question that arises most frequently is, what is the relation of the exhaust gas of an engine idling to the exhaust gas of the same engine under load. The answer is that the mixture will be found to be richer when the engine is idling. The amount of difference depends upon the engine and the carburetor and some other factors.

If the analysis is made in the shop the operator can then get an accurate reading of his mixture with the engine idling at any speed. He must still depend upon his ability to compensate for the conditions of the road and load. If the reading is taken on the road it is taken under operating conditions.

The reading will give the average of all cylinders. This makes it necessary to consider that some cylinders are



Cities Service power prover

probably running on a leaner mixture than others so that as the danger point approaches on the dial remember that it shows the average of all cylinders. Engines with duplex manifolds and duplex or double carburetors can be run somewhat leaner than the engines with single manifolds and carburetors since there is not as much difference between the cylinders.



Richfield exhaust gas analyzer

Most authorities agree that the mixture for full throttle should not exceed 13 lb. of air to 1 lb. of fuel on the lean side. This will give us the leaner cylinders running at 14 lb. to 15 lb. of air to 1 lb. of fuel.

## Darky Draymen Say 'Amen' to Code

(CONTINUED FROM PAGE 19)

THE chapter so far has held its meetings in the "Quick Service Cafe," furnished free by the proprietor, but it has now established dues for the purpose of renting a hall. Since the adoption of the code it has turned itself into something of a club or association where the members meet together regularly to discuss their mutual problems. They now propose to do some cooperative newspaper advertising and possibly raise a fund to aid the trucking industry's fight in the next legislature for less taxes.

The truckmen are assigned certain street locations from which they may hawk their services as "transfer man" or "drayman." Once their equipment consisted of horse-drawn vehicles, but most of them are now able to get hold of a truck of some kind, although it may be a model T which sounds like a "peckerwood sawmill" when the motor is started up. Between jobs they swap jokes with each other, being members of the most carefree race on earth. If someone carves a watermelon a good time is sure to be had by all.

"I'SE tell you," said one old negro who has occupied one dray stand for 25 years, "Abe Lincoln freed us niggers, and now's Roosevelt has done come along and feed us. All what ain't got no job git fed by the CWA and the welfare. We fellows what is got a job hauling can git more money for it. If a customer say the price is too much we pull out the code and show him what it say. The customer may say 'dam' but he must pay what Mr. Roosevelt says. If the customer go down the street and gits another drayman to do the job cheaper then we git that nigger for scalawagging. Us draymen now has a society of our own and we has put our business on a ethical basis."

This self-same drayman, when asked what he expects to do with the extra money he is making under the code, quickly replied:

"Buy a torpoling (tarpaulin) so I won't let the next load of sugar I hauls git wet."

COMMERCIAL CAR JOURNAL

FIVE ne previous Corbitt C models k 1148T, an pleasing a radiator hined with the truck cab wind ture.

The 11 models. heads and draft cathave sing but the 1 Four series.

January... January...

February. February. March...

April.... April.... May....

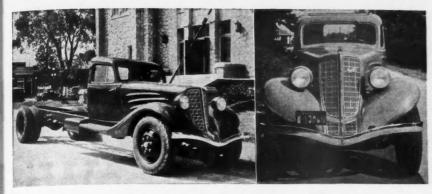
June...
July

August...

8 Months 8 Months 8 Months

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Остове



Corbitt's new truck models 1348 and 1146

#### **New Corbitt Line Stylish**

FIVE new truck models replace the previous series of trucks made by the Corbitt Co., Henderson, N. C. The new models known as 1146, 1148, 1348, 1148T, and 1348T, have an especially pleasing appearance. A V type sloping radiator and slanting windshield combined with horizontal hood louvres give the trucks long sweeping lines. The cab windows have a ventilating feature.

The 1148T and the 1348T are tractor models. Both have aluminum cylinder heads and the 1348T has duplex downdraft carburetion. All other models have single downdraft carburetors. All but the 1146 have 8-cylinder engines.

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Four speed transmissions are stand-

ard on all models except the 1348T which has a five speed gear box with a direct drive in high. The horsepower of the 1146 which has a six cylinder engine with a bore of 31/16 in. and a stroke of 43/4 in. is 82 at 3500 r.p.m. and the torque is 160 lb. ft. The eight cylinder engine 31/16 x 43/4 in. used in all the other models developes 93 hp. at 3500 r.p.m. except when the aluminum head is fitted. The aluminum head raises the compression ratio from 5.3 to 1, to 6.2 to 1 with the result that the horsepower is raised to 110 at 3500 r.p.m. and the torque jumps from 183 lb. ft. to 210 lb. ft.

For detailed specifications turn to Specifications Table.

#### M-H Refrigerated "Semi"

AN interesting development in highway transportation has been completed by the Marmon-Herrington Co., Inc., Indianapolis. It is a refrigerated semitrailer unit powered by an all-wheeldrive tractor on which is mounted a double-decked cab.

The tractor itself is of new design which permits the use of the comparatively short wheelbase of 145 in. without placing the cab over the engine and, at the same time, providing the added space for the sleeping compartment. The tractor is a Marmon-Herrington Model A30S-4, driving through four wheels and powered by a 106-hp. engine with bus-type generator. There are both standard and auxiliary transmissions. First gear ratio is 7 2/5 to 1.

The maximum payload of the unit is



Refrigerated semi-trailer unit

24,000 lb. The semi-trailer, has an ice capacity of 500 lb. and has both side and rear doors. The overall length is 33 ft. 10 in. The height at the highest point, not loaded, is 11 ft. 4 in.

#### New Truck Registrations by Makes by Months

	Autocar	Brockway	Chevrolet	Diamond T	Dodge	Federal	Ford	G. M. C.	International	Mack	Reo	Sterling	Stewart	Studebaker	White-Indiana	Miscellaneous	Total
January         1934           January         1933	79 47	91 39	8,917 4,884	406 205	2,581 360	120 52	6,650 3,734	555 344	2,284 983	161 79	289 137	9 12	61 29	98 134	284 287	318 383	22,903 11,709
February         1934           February         1933	58 41	81 42	10,718 4,645	420 174	2,723 348	121 58	6,459 2,185	453 271	2,150 1,126	144 62	339 151	14 8	60 31	109 152	357 180	270 233	24, 476 9, 707
March	64 45	117 51	15,112 4,749	501 202	4, 154 489	170 54		717 318	2,841 1,201	145 55	461 132	10 5	67 32	126 101	452 174	315 289	33,894 9,934
April 1934 April 1933	88 76	104 97	15,050 7,299	534 362	4,367 870	178 103		839 644	2,729 2,021	206 137	527 216	4 12	90 40	123 180	558 201	318 487	38,882 17,301
May. 1934 May. 1933	146 106	117 88		508 375	4,441 1,332	186 138		1,031 647	2,849 2,463	212 152	578 290		103 70	193 205	544 218	375 520	39, 831 20, 92
June. 1934 June. 1933	95 113	108 66		481 363	3,729 1,936				2,435 2,482		504 278		67 65	133 184	447 219	350 439	34,778 23,25
July         1934           July         1933	99 137		14,704 14,613	457 440	4,224 2,582	182 171	12,492 7,058	951 757	2,548 3,007		416 381	17 18	67 74	156 198	396 303	432 579	37, 496 30, 642
August.       1934         August.       1933	61 127	107 82	15,790 11,455		4,754 4,563	162 134			2,809 2,981		439 351				337 241	383 460	40,796 28,799
8 Months. 1934 8 Months. 1933	690 692		107, 420 66, 485		30,973 12,480					1,367 994	3,553 1,936			1,076 1,368			273,03 152,27
8 Months% Gain		52	62	50	148	63	130	53	27	38	83	22	28	-21	85	-19	8

<sup>- =</sup> decrease



## Whi Ur Wit Pa

Left — Roominess and comfort marked features of the cab design

Below — 12 - cylinder horizontal opposed pancake engine; bore 3 % in stroke 3 % in., displacement 465 cu. i

ITH "underslung power" delivered by a "pancake engine," The White Co., Cleveland, gives the heavy-duty field two 12-cylinder truck models which must be considered milestones in American truck engineering progress.

The pancake engine is a real departure from conventional truck engine design. It is a powerplant with horizontal-opposed cylinders. This power is underslung by being located under the floorboards. These trucks are not designed for any one specialized purpose but meet all heavyduty hauling conditions equally well. In addition these models have the advantages attendant upon 1/3-2/3 weight distribution and short wheelbase.

The new models are known as Models 730 and 731, the former having a single-reduction and the latter a double-reduction final drive. Both are unusually short, considering their gross weight ratings of 26,000 and 30,000 lb. respectively. The 12-cylinder flat engine under the floor board is quite accessible. Outstanding performance would naturally be expected from an engine with this number of cylinders,

and some performance figures are given at the end of this article. Driver comfort is assured by a roomy, well-ventilated, "streamlined" all-metal cab.

The pancake engine is similar in design to the 12-cylinder bus engine brought out by The White Co. about two years ago, but smaller. It has a bore of 35% and a stroke of 334 in making its displacement 465 cu. in The short stroke makes for low piston

speed rigid of 6.5 high tons a pract bustic 131 h 2400 of 0.1 is the truck

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# i Underslings Power i Pancake Engines

12-Cylinder, Horizontal-Opposed Engine is Used in Two Chassis Models. Accessibility and Performance Are Big Features

speed, low inertia forces, and a more rigid crankshaft. A compression ratio of 6.5 to 1 is used, which seems very high for an engine with cast-iron pistons and cylinder heads, but is rendered practical by a specially shaped combustion chamber. The engine develops 131 hp. at 2800 r.p.m. and 124 hp. at 2400 r.p.m. A maximum fuel economy of 0.6 lb. per hp.-hr. is claimed, which is the same as that of White 6-cylinder truck engines.

WET cylinder liners of a special grade of cast iron are inserted into the main engine block and sealed by an unusual method. At the outer end the liner is provided with an external flange which enters a counterbore in the block. One corner of this flange is beveled off to make room for a copper-asbestos gasket. At the inner end the liner is a free fit in the bore of the block, and sealing is effected by means of three rubber rings, means being provided for draining off any water that may seep by the outer two of these rings, thus preventing it from getting into the crankcase. Since the liner is in metallic contact with the block over a very short length only, the likelihood of its rusting in place so it can't be removed is very remote.

The crankshaft has seven main bearings of 2½ in. diameter and is forged with integral counterweights. It carries two connecting rod big ends side by side on each crankpin, the latter having a diameter of 2 7/16 in. Main and connecting-rod bearings are of the interchangeable steel-back, b a b b i t t-lined type. The total projected area of main bearings is 39.5 sq. in. and the effective projected area 30.9 sq. in. Pistons are of cast iron, of light design, and tin-plated for rapid wearing in. Piston pins are of the full-floating type, 1½ in. in diameter.

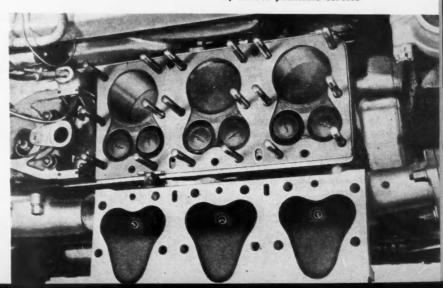
Inserted exhaust valve seats of the screwed-in and doweled type, developed by White, are used. The valves are located on the under side of the block, so that the valve pockets will be surrounded with water as long as there is any in the cooling system, and burning of valves due to low water is practically eliminated.

SINCE both cylinder banks and the crankcase are in a single casting, a high degree of rigidity is assured. At its rear end the engine is mounted in rubber on a sub-frame, which in turn has two rigid mountings at the rear and one rubber mounting at the front. In addition to the engine, the radiator is mounted on the sub-frame, and engine, transmission, emergency brake, and instrument board with all accessories can be removed from the truck as a unit.

All valves are actuated by a single camshaft located centrally below the crankshaft and driven from same (Turn to Page 50, Please) - Accessibility when mounted

Above — Accessibility when mounted and easy removal are features in reducing the maintenance problem

Below—Cylinder heads cast in blocks of threes facilitate service



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#### **NEWS**

#### **Recommend Special Highway Motor Tax**

#### Tax Association Makes Suggestions for Legislative Policy

Suggestions for formulation of legislative policy on the "urgent problems of motor vehicle and related taxation" were made by the committee on motor vehicle taxes at the annual meeting of the National Tax Association in Boston early this month.

The following recommendations were made to expedite the just distribution of the burden of highway support which problem was so actively discussed by the Western Truck and Bus Conference in Salt Lake City this past summer:

Special taxes borne by motorists to pay the annual costs of highways, plus share of the cost of local roads and arterial city

streets.

In addition to special taxes, persons engaged in motor transportation for commercial, personal recreational or business use should pay general taxes as property owners and income receivers.

Special motor vehicle taxes in each state should be distributed among vehicles of different sizes, proportioned as nearly as possible to the highway cost occasioned

by each class of vehicles.

A gasoline tax and a registration tax to constitute "special taxes." tax to be imposed at a flat rate in each state, based on receipts of fuel rather than on sales, to avoid evasion of the tax.

Registration taxes for smaller vehicles to be based on the gross weight of vehicle and load, graduated so that the tax increases more than directly in proportion to the increase in gross weight. This graduated tax is essential to offset failure of fuel consumption to increase as rapidly as gross ton mileage and to take account of the greater highway cost incurred for heavy vehicles.

#### Ford Takes Show Space

Displays of Ford cars and trucks will be among the features of the 1935 Automobile Show to be staged in Grand Central Palace, Jan. 5-12, by the Automobile Merchants Association of New York City. Official confirmation that there would be a Ford display this year came when dealer representatives of the Ford Motor Co. appeared at N.A.C.C. headquarters to participate in the space drawing with repre-sentatives of 21 other car and light truck makers.

#### Truck Code Assessments Okayed

An amendment to the trucking code has been approved by NRA making mandatory the payment of code assessments. Members of the National Code Authority for the industry give state compliance officers the necessary authority to proceed against non-registrants.

#### Truck Output Ahead 74 Per Cent for 8-Month Period

Truck production for the month of August totals 51,309 units showing an increase of 9,601 over the previous month, and an increase of 9,868 over the same month in 1933. Year-to-date output for the first eight months totaled 407,652 units for an increase of 74 per cent over

the same period last year. Gains ranging from 22 to 148 per cent are shown by manufacturers for the first eight months of this year over eight months in 1933.

#### **Transportation-Maintenance** Men Meet in Newark, Nov. 8

A regional transportation and maintenance meeting sponsored jointly by the Society of Automotive Engineers, New Jersey Truck Association and the Newark Chamber of Commerce will be held at the Douglas Hotel, Newark, N. J., Nov. 8 to 10.

Among the speakers will be Major R. F. Britton, National Highway Users Conference; T. V. Rodgers, American Trucking Association; George Clinton, Sheffield Farms; E. P. Lott, National Air Transport; N. Mitchell, Petroleum Co.,

#### **SAE Nominates Officers**

William B. Stout has been nominated as president of the Society of Automotive Engineers for the year 1935. Nine vicepresidents, one representing each professional activity of the S.A.E., were also nominated. They are: C. H. Chatfield, United Aircraft and Transport Corp.; Philip B. Taylor, Wright Aeronautical Corp.; C. L. Cummins, Cummins Engine Co.; D. P. Barnard, Standard Oil Co., Indiana; L. P. Kalb, Continental Motors Corp.; C. O. Richards, Cadillac Motor Car Co.; V. P. Rumely, Hudson Motor Car Co.; T. C. Smith, American Telephone & Telegraph Co.; C. O. Guernsey, J. G. Brill Co.

#### Studebaker Shifts Sales Managers

Studebaker Sales Corp. has made the following changes in the personnel of truck sales executives:

J. L. Engels, formerly sales promotion manager, is now district truck manager, Cleveland branch. H. O. DeBoer, formerly district truck manager at Chicago, is now at the home office truck division as special representative. Jay Rathbun is now district truck manager at Atlanta branch, succeeding M. H. Sinnott, who has been transferred to Louisville as district truck manager of territory under the Cleveland and South Bend branches.

E. J. Frederick has been transferred to the St. Paul branch, succeeding W. Vander Meulen, who has been transferred to the Chicago branch as district truck manager.

(Turn to Page 66, Please)

#### Eastman to Speak at ATA Convention

#### Other Prominent Speakers Scheduled With Important Reports

Joseph B. Eastman, Federal Coordinator of Transportation, will speak at the American Trucking Association conven-tion which meets at the Sherman Hotel in Chicago on Oct. 22. He will discuss Federal regulation in relation to the trucking industry. It is expected his speech will be broadcast.

Others scheduled to speak before the convention are: Charles P. Clark, Acting Deputy Administrator, Transportation Section, NRA; Sydney J. Williams, National Safety Council; Dr. A. W. Whitney, National Bureau of Casualties and Surety Underwriters; Dr. Isador Lubin, Commissioner of labor statistics, U. S. Department of Labor; C. L. Dearing, former Assistant Deputy Administrator, Transporta-tion Section, NRA.

The National Code Authority for the industry is scheduled to meet a day before

the convention opens.

#### Wisconsin Axle Wins Patent Suit

The suit brought by the Wisconsin Axle Co., a subsidiary of the Timken-Detroit Axle Co., against the Automotive Parts Co., Cleveland, Ohio, has been decided in favor of the plaintiff, according to the following statement issued by the plain-

"In the suit, the District Court of the Northern District of Ohio entered an order holding contributory infringement has occurred and an injunction has been issued under the seal of that Court enjoining and restraining The Automotive Parts Co. of Cleveland, Ohio, from making, using or selling bevel gear sets, axle shafts, or any replacement parts or elements usable for rebuilding axles made in accordance with patent No. 1,571,801 and with Claim 2 of patent No. 1,730,900 and from infringing upon or contributing to the infringement. of said patents.

"This suit was brought by the Wisconsin Axle Co. as a test case against The-Automotive Parts Co. for the purpose of securing an adjudication on the right toprevent unauthorized use or sale of theseparts made by others than the Wisconsin Axle Co., to be used in such patented axle combinations with the above results."

#### Sharpe New Thermoid V.-P.

Frank A. Sharpe has been elected vicepresident in charge of sales of the Thermoid Rubber Co. by the directors of that organization.

#### **Toledo Steel Opens Jobbers Warehouse**

The Toledo Steel Products Co., Toledo, Ohio, announces it has opened the "Jobbers' Warehouse," 660 Antoinette Ave., Detroit. W. H. Copher is manager.

COMMERCIAL CAR JOURNAL



Cars equipped with Lockheed Hydraulic Brakes serve a market that knows precisely what it wants, and will not be denied. These owners insist on hydraulic brakes and will not buy a car without them.

This ready market—this insistent market—is but one of the advantages of equipping with Lockheed Hydraulic Brakes. Manufacturers find a noticeably

easy factory assembly and a low service overhead effect important economies. Dealers like the ease and the permanence of adjustment of these great brakes. Owners like the pronounced freedom from attention which Lockheeds give them, as well as the pleasant and highly efficient operating characteristics. That, as a matter of fact, is why these owners form this unique *insistent* market.

HYDRAULIC BRAKE COMPANY
DETROIT, MICHIGAN

## LOCKHEED HYDRAULIC Four BRAKES Wheel

OFFICIALLY SERVICED THROUGHOUT THE NATION BY WAGNER ELECTRIC CORPORATION

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Honor drivers for Hinckley & Schmitt, Chicago, who received National Safety Council awards for a year of safe driving

THE instruction of the driver, to some extent, depends upon what he already knows. In general, however, instruction should include these points:

1. Care and maintenance of the vehicle. This should be undertaken by a mechanic or garage superintendent who will make clear the responsibilities of the driver in this respect and teach him to do the necessary mechanical things properly.

2. Instruction in traffic rules and driving practices, to be given either by an old driver or preferably, by a superintendent or special instructor.

3. Instruction in the policy of the company, especially with respect to disciplinary action, is necessary, and should be given by the superintendent. Such instruction should include not only special rules with respect to driving, but regulations for the loading and unloading of the vehicles, for contacting with customers, and general conduct on the highways.

4. What to do in the case of an accident. The driver who knows beforehand how to get proper names, addresses, and other data should be able to turn in reports which will be of great value to his company in the safety program, and in the event of accident claims.

TRAINING may be considered as continuous. Every once in a while it will be advantageous for the company to review old drivers in traffic regulations, company rules and even regular driving practices. In addition, the driver who has more than his share of accidents, may profit by reinstruction.

A company cannot prevent accidents without first knowing how the accidents are occurring. Every accident, therefore, no matter how minor, should be reported and recorded—not only the fact of its occurrence, and other facts bearing on liability, but all the circumstances of the accident—all the factors

#### FREE SAFETY PAMPHLETS

FOR further information on small fleet safety organization, use the postcard on page 74 and check "D". This will bring you National Safety Council Pamphlets on selection of drivers for commercial vehicles and standard forms for keeping accident statistics.

that helped to contribute and all the ways in which the accident might have been avoided.

Complete information, with a minimum amount of work, may be obtained by the use of three forms-an original report of the accident, a record sheet, and a summary sheet. (See free offer.) On the first, the driver or his supervisor makes a report of the individual accident. The record sheet provides for the tabulation of 24 individual accidents, will all their attending circumstances. The summary report is made up from the record sheet and condenses, for easy inspection by the proper executives, the company's experience over a period of time. Such records guide the management in the direction where it is most needed; there is no wasted energy on trivial circumstances. They single out the accident-prone driver and disclose exactly the unsafe driving practices that got him into trouble. Financially they tell the management what accidents cost and what reductions are made from time to time in those costs. Adequate records are essential in conducting fleet safety contests, in rewarding drivers for no-accident records, or in comparing experiences with other fleets.

W HILE it may be true that 85 per cent of motor vehicle accidents are due to human failure, the management must provide safe equipment and careful maintenance of vehicles. The management cannot expect an intelligent driver to believe that the management is serious in its efforts to reduce accidents

when the mechanical condition of the equipment is obviously poor due to the management's indifference. Further, a skillful driver sometimes can, by using extreme care, manage safely with poor brakes or loose steering gear; but the moral effect on the driver is bad, and if an accident should occur, he can hardly be criticized for blaming it on the vehicle.

There is, therefore, every reason for a rigid maintenance and inspection schedule in every fleet even though it may be a small one. The driver should be instructed and encouraged to report defects when returning to the garage at night, or sooner if necessary. Regular inspections by the garage mechanic should be made at stated intervals. The majority of companies discourage their drivers from making repairs or adjustments unless in an emergency.

That such a safety organization for small vehicle operators is practicable and efficacious is shown from the story of a small Newark, N. J., commercial vehicle operator. The operator, Charles T. Roemer, of Roemer Bros. Trucking Co., related his experiences with safety work at the Fourth Annual Greater New York Safety Conference.

I IVE years earlier, he said, the accident records were so bad that an insurance company refused to carry his company as a risk. Mr. Roemer said that he soon learned that his company was classified as a hazardous risk by other insurance companies. One insurance company finally consented to carry the Roemer Trucking Company but insisted upon a 40 per cent debit charge in addition to the regular carrying charge. This extra charge amounted to \$5,000. At the time he delivered the address Mr. Roemer said his company then had a 50 per cent credit rating at the Insurance Rating Bureau as a result of approximately five years of active safety work.

In its essentials, the program followed the one just outlined. As recommended by the National Safety Council, the Roemer company made free use of its poster boards and educational literature. An elaborate set of company rules was drawn up with penalties varying according to the nature of the offense and according to the frequency.

The company stressed the importance of seeking accident causes and the determination of the responsibility for them. For this purpose, a replica of (TURN TO PAGE 66, PLEASE)

COMMERCIAL CAR JOURNAL

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## ONE CHEVROLET TRUCK **USUALLY LEADS TO ANOTHER**



Chevrolet truck owners themselves offer the best evidence that Chevrolet trucks give exceptional satisfaction. They usually order new Chevrolet trucks to replace old equipment, convinced by personal experience of Chevrolet economy, dependability and long life. Their loyalty is rewarded, for each year Chevrolet trucks give increased hauling satisfaction. The 1934 line of Chevrolet trucks provides many new improvements for efficient hauling, full truck strength in every part, and the welcome economy of six-cylinder, valve-in-head engine design. So many truck owners standardize on Chevrolet equipment that it will pay every firm to investigate the reason. You can handle every load at minimum cost for gasoline, oil and upkeep with low-priced Chevrolet trucks. CHEVROLET MOTOR COMPANY, DETROIT, MICHIGAN Compare Chevrolet's low delivered prices and easy G.M.A.C. terms A General Motors Value

## CHEVROLET TRUCKS

Остовек, 1934

#### Replace Chevrolets with **More Chevrolets**

200,000 Miles... In 1930 we purchased a Chevrolet truck which has been hauling freight loads of 4 to 9 tons on the truck and 4-wheel trailer. It traveled 114,000 miles before requiring a major motor overhaul. It has now traveled over 200,000 miles. I purchased another Chevrolet truck in 1933, a new 1934 Chevrolet truck the first part of this year, and I have placed my order for another 1934 Chevrolet truck with semi-trailer. H. F. Reilley, General Manager,

California Fireproof Storage & Transfer Co. 125,000 Miles . . . The Chevrolet 1933 tractor-truck I am now operating has never stopped in 125,000 miles over a period of 11 months and is now running on its original rings. I have had the valves ground twice. I have experienced a 12-mile-per-gallon gas consumption over this period. Within the next few days I will give you an order for a new 1934 model for immediate delivery.

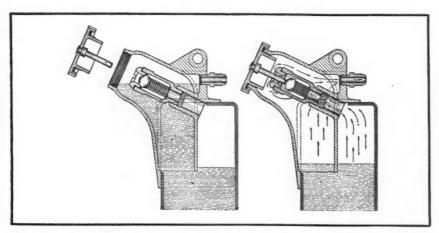
H. N. Craig, Merchants Parcel Delivery Co., Terre Haute, Ind.

100,000 Miles . . . I am enclosing a photograph of one of the Chevrolet fleet I bought in 1929. This truck has gone over 100,000 miles, at the present time is covering a route of 100 miles a day. Because of such performance, I have placed an order for 12 more. G. L. Scheer, Scranton, Pa.

**150,000 Miles . . .** The 1929 Chevrolet truck I am trading today has been driven more than 150,000 miles in  $4\frac{1}{2}$  years. Nothing was ever done to the motor except the replacement of a coil. The 1934 Chevrolet truck I am buying today is our 9th one. C. R. Bevers, White Star Laundry, Durham, N. C

#### WHITE UNDERSLINGS POWER WITH PANCAKE ENGINES

(Continued from page 45)



Radiator cap with plunger which operates ball check valve forming air trap which allows for water expansion when cap is replaced

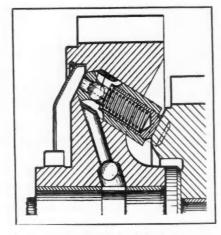
through a train of three alloy-steel helical gears, case-hardened and ground. Belt drive is used for the generator, air compressor and water pump. The radiator fan is driven directly from the end of the crankshaft, the hub of the fan being flexibly mounted on rubber. The water pump has an anti-friction outboard bearing to take the thrust load, and the pump bearing proper is automatically lubricated. These units are immediately accessible when the insulated floorboards at the side are removed. The boards have a special locking attachment and can be either swung around on their hinges or removed. These same floorboards give access to the distributor, spark plugs, coils, etc.

Lubrication is by the dry-sump system. Oil is forced under pressure to all bearings, including the piston-pin bearings, to which it flows through the rifle-drilled connecting rods. The double scavenging pump draws oil from both ends of the crankcase and forces it through the oil filter and oil cooler to the main reservoir, from which it is drawn by the main pressure pump which delivers it under pressure to the main connecting-rod, camshaft, pistonpin and idler-gear bearings, with a metered feed to the cylinders, etc. The filter, of the permanent metallic type, is arranged for easy access for cleaning.

Two downdraft carbureters with accelerator pumps are fitted, and each provided with an air cleaner.

THE mechanically operated centrifugal governor is driven by gearing off the camshaft and limits engine speed to 2400 r.p.m., which is well below the maximum safe limit of operation.

The radiator, which is removable with the engine, is of the flat-tube type



Spring return plunger lubricant pump set in transmission gear actuated by cam on rim of adjacent gear

and mounted on rubber. It is provided with a unique expansion tank designed to minimize loss of water due to expansion when heating up. The action of this expansion tank is automatic and is controlled by the radiator cap. When the radiator is being filled and the cap therefore is off, the overflow is sealed

and a definite amount of air is trapped in the top tank. When the cap is screwed on, the valve is opened and the air is released, which leaves space into which the water in the cooling system can expand. An automatic, air-operated winter front can be furnished as an extra.

The electrical system is of the 6-volt type, with truck-type battery. Ignition is by battery spark, and spark advance is fully automatic.

The wet type of single-plate friction clutch, which has been successfully used by White for more than 20 years, is used on these trucks. The driven disk has outside and inside diameters of 15½ and 8 in. respectively and its total friction surface figures out to 264.8 sq. in. Its anti-friction throwout bearing is supplied with oil from the engine lubricating system.

THREE White-designed four- and five-speed transmissions are available for use on these trucks. A four-speed transmission is standard on Model 730 and a five-speed, with direct drive in fifth, on Model 731. A five-speed, overdrive transmission is optional on the 731 at extra cost. In the five-speed transmission with direct drive in fifth the first gear is carried in a case secured to the rear of the main transmission housing, while in the transmission with overdrive the fifth gear is so housed. The direct ratio for the truck with standard five-speed transmission is 8.11:1, while the overdrive ratio of the optional transmission is 0.789. In the standard transmission of the Model 731 the gears for three of the forward speeds are of the silent, constant-mesh helical type, while in the optional over-speed transmission four of the five speeds are silent.

To assure positive lubrication of the constant-mesh gears, a special design of oil pump is incorporated in the (Turn to Page 87, Please)





COMMERCIAL CAR JOURNAL

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Осто

### TRUCK SPECIFICATIONS TABLE

The Commercial Car Journal's Truck Specifications Table is brought up to date in each issue from data supplied monthly by truck manufacturers

#### KEY TO ABBREVIATIONS AND REFERENCE MARKS

GENERAL

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e n Chassis Price—Chassis price quoted applies to the standard wheelbase and specifications listed. All prices are F.O.B. factory.

Ready next issue.

\*\*\*—List price not yet established. Ready next issue.

Tonnage Rating—Where a spread of ratings is given the maximum ratings are for ideal operating conditions and the minimum for extremely difficult conditions; the ranges between are for varying operating conditions.

Gross Vehicle Weight—Is chassis weight, plus body and cab, plus payload. Gross vehicle weight given for a model is based on maximum recommended its based on maximum recommended thre size and not on three listed as standard equipment.

Chassis Weight Stripped—Includes gas, oil and water and all things included in chassis price. Does not include the weight of cab.

Maximum Brake H. P. at Qiven

gas, oil and water and all things included in chassis price. Does not include the weight of cab.

Maximum Brake H. P. at Given R.P.M.—Is actual dynamometer reading without accessories.

Trasters—Unless given the designation N (meaning not available as tractor), all standard models may be assumed to be available as tractor.

(A) All Torque and Brake Horse-power values listed are based on engine outputs with all Standard Equipment Accessories running and are the same values obtaining with the truck on the road in actual operation.

(N) Not available as tractor.

(T) This designation accompanying a model number indicates vehicle is specifically designed for tractor use only.

c. o. s.—Cab-over-engine design.

(3) Corbitt—Larger engines and corresponding auxiliary units provided on all models at extra cost.

(4) Day Elder—Model 75—1½ ton—same specifications except price—\$945, and larger tire size—B6.00/20 front and DB6.00/20 rear.

(5) Dodge—F-61 available as special tractor truck with 146-inch wheelbase with model designation of K-60, at \$2645. K-61 available as special tractor truck with 146-inch wheelbase with model designation of K-60, at \$2645. K-61 available as special tractor truck with 146-inch wheelbase with model designation of K-60, at \$2645. K-61 available as special tractor truck with 146-inch wheelbase with model designation of K-60, at \$2645. K-61 available as special tractor truck with 146-inch wheelbase with model designation of K-60, at \$2645. K-61 available as special tractor truck with 146-inch wheelbase with model designation of K-60, at \$2645. K-61 available as special tractor truck with 146-inch wheelbase with model designation of K-60, at \$2645. K-61 available as special tractor truck with 146-inch wheelbase with model designation of K-60, at \$2645. K-61 available as special tractor truck with 146-inch wheelbase with model designation of K-60, at \$2645. K-61 available as special tractor truck with 146-inch wheelbase with model designation of K-60, at \$2645. K-61 available as special tractor

which are 7.50/17 and lighter rear springs.

(6) General. Motors—Models T-18 to T-61 inclusive are also available for export only as coach chassis. Double reduction axies optional at extra cost in Models T-43, T-43T, T-51, T73H and T-43. Worm type axies optional at price deduction in Models T-61, T-75T, T, T, T, T-75H and T-83. Chassis prices and elaborate of the complete of the

etc.and prices will be quested eatlon.

Oramm—Larger engines and corresponding auxiliary units provided on all models at extra cost when type of service demands. Wheelbases and body mounting dimensions may change to suit special requirements. Double reduction axies available on all models except AX and BX.

duction axies available on all models except AX and BX.

Gross weight indicated for each model in the table is the straight rating.

Series CXH is supplied with Hercules JXB engine in Model CXHB and Hercules JXB engine in Model CXHB and Hercules JXB engine in Model CXHB and Hercules JXB in Model CXHB and Hercules JXB to in Model CXHB.

(7) Grass Premier—Eight cylinder engines available on following models: 835 with Lyc. QU at \$1515 list: 865 with Lyc. Hercules JXB with Lyc. AZE at \$5400.

(8) International Harvester—A-1, ½ ton, same as A-2 except less spring leaves and smaller tires.

(9) Le Moon—Model 600 availables with Waukeelaa 611 and 801 available with Waukeelaa 612 and 801 available with Waukeelaa 612 available with Waukeelaa 613 available with Waukeelaa 614 available with Waukeelaa 615 available equipped with Cummins Model H Diesel engine, †Reo—Model 1D is the longer wheelbase edition of Model 1B. The frame dimension is 7x2 ½ x ½. It is furnished at extra cost.

††Reo—2J,2K same as 2H except 166 in wheelbase and price of \$1695

††Reo—3J same as 3H except wheel-base of 170 in. and price of \$2085; 3K same as 3H except 185 in. wheelbase and price of \$2155. 3M same as 3H ex-cept 205 in. wheelbase.

cept 205 in. wheelbase.

(11) Studebaker-S-2 in 141 in. and 165 in. wheelbases has 64 in. frame depth.

(12) White—Each model shown is furnished with different specifications for different tonnage ratings.

\*—Factory governed speed 2400 r.p.m. (12a) White—Special prices for each installation.

installation.

(13) Marmon-Herrington—Available with Hercues Diesel engine. Price on application.

application.

(14) Ford—Rear axie ratios 5.14 and 6.6 optional on 1½-ton trucks.

(15) Mack—Chassis price and weight include ab.

(16) Baderman—Will furnish Continental, Hercucs, Waukesha and Lycoming engines at the buyer's option.

(17) Moreland—All Moreland models available with Waukesha engines and as six-wheelers with dead axie.

(18) Walker—Frame lengths may be changed, within limits, to suit individual requirements, at no additional cost.

changed, within limits, to suit individual requirements, at no additional cost.

MAKES—ALL

AB—American Boseb.
A LaF—American La France.
AL—Auto Lites.
B—Bendix.
BB—Borg & Beck.
BL—Brown-Lipe.
BO—Bendix front, Own rear.
Blo—Blood.
Bu or Bud—Buda.
BW—Bendx front, Westinghouse rear.
C or Col—Columbia.
Car—Carter.
Ch—Chicago.
Ci—Ignition by compression.
Ci or Cla—Clark.
Cle—Covert (transmission).
Co—Covert (transmission).
Co—Covert (clutch).
Co—

EV—Electro-Vac (gov.) Plerce.

Pe—Fedders.
Fu—Fuller.
Go—G. & Governor).
Ha—Handy (governor).
Ha—Handy (governor).
Ha—Handy (governor).
Ha—Handy (governor).
Ha—Handy (governor).
Ha—Harrison.
Hs—Merclant & Evans (clutch).
Hs—Merican Car & Fdry. (governor).
Jac—Saginaw.
Jo—Jones.
KP—Handy.

-Handy.

KP—Handy.

L—Lockheed.
Li—Lipe, W. C.
LN—Leece Neville.
Lo—Long.
LO—Lockheed front, Own rear
LW—Lockheed front, Wisconsin rear,
Lyc—Lycoming.

Mc—McCord.

Ma—Marvel.

ME—Merchant & Evans.

M M—Mechanics Mach.

Mo—Modine (radiator).

My—Mallory.

Ny—Mallory.

NE—North East.
No—Not supplied.
ns—No Standard.
O or Ow—Own.
Op or Opt—Optional.

Op or Opt—Optional.

pe—Pierce (governor).

pe—Perce (governor).

pe—Perce (governor).

pe—Perce (governor).

pe—Perce (governor).

pe—Rober (governor).

Tii—Tillotson.
T or Tim—Timken.
TWH—Timken Wisconsin Herrington
WQ—Warner Gear.
Wa—Waukesha (governor).
Wau—Waukesha.
W or Wis-Wisconsin.
W=—Westinghouse.
Yo—Young
Zen—Zenith.

BRAKES-SERVICE

Location

LOCATION

2/4—Two Wheels, rear only.
2/4—Two-wheel brakes effective on all four wheels through driveshaft.
4/4—Brakes on four rear wheels effective on all wheels through driveshaft.

7/4—Brake on transmission effective on all four wheels through driveshaft.

4—Four Wheels, front and rear.

4—Four Wheels, front and rear.

4—Four Wheels, front and rear.

5—Six Wheels, front and rear.

9—Propeller shaft.

Operation

A—Air.
D—Hydraulic and mechanics
H—Hydraulic.
M—Mechanical.

BRAKES-HAND

Location

C—Center of double propeller shaft 2—Rear wheels. 4—Four wheels. 7—Transmission. 7—Transmission. 8—Driveshaft.

D—Tru-Stop disk. I—Internal. X—External.

**BRAKE DRUMS** 

Material

Material

s—Cast alloy iron.

A—American Car Fdry.

C—Centrituse

D—Dayton.

E—Ermalite.

d—Gunite.

d—Gunite.

H—Hunt Spiller.

c—Cast foxeel.

P—Pressed steel.

S—Cast steel.

(Where a combination of any of the above is used, the first reference may applies to the front and the second to the rear drums.)

CLUTCH

Type D—Multiple disk. dp—Double plate. O—Plate in oil. P—Single plate

ENGINE

Valve Arrangement

-Inlet valve in head; exhaust valve at side. H—In head. L—"U" head, valves at side. T—Inlet and exhaust on opposite sides.

Camshaft Drive

Piston Material

A—Aluminum alloy.

B—Semi-steel.

C—Cast iron.

N—Nickel iron.

S—Aluminum alloy with strut.

Main Bearings

Oiling System

CC—Pressure to main, connecting rod and camehaft bearings. FP—Pressure to main, connecting rod camehaft bearings and piston pins. PC—Pressure to mains and connecting rod bearings.
PG—Pump, gravity and splash.
PS—Pressure with splash.

FRAME Type

**FUEL SYSTEM** Fuel Feed

E—Electric pump.
G—Gravity.
M—Mechanical pump.
P—Pressure.
V—Vacuum.
B—Bosch
C—Cummins

**REAR AXLE** 

Final Drive and Type

B-Bevel.
C-Chain.
D-Dead.
F-Full-floating.
2-Double Reduction.
S-Spiral bevel.
W-Worm.
w/2-Worm or Double Reduction
Optional.
M-Semi-floating.
M-Three-quarter floating.

Drive and Torque

A—Radius Rods and Torque Arm. H—Hotchkiss, (springs) R—Radius Rods T—Torque Arm. U—Torque Tube.

SPRINGS

Auxiliary Type

3-semi-elliptic above or below main springs.

4-Quarter elliptic.

C-Coll spring.

N-No.

O-Optional.

**TIRES** 

**TRANSMISSION** 

Location

A—Amidships.

J—Unit with jackshaft.

U—Unit with engine.

Auxiliary Location
No—Not turnished.
02—2 speed axle unit optional at extra

oost.
Op—Optional at extra cost.
A—Amidships.
R—Rear of amidships main transmission.
U—Unit with engine.

WHEELS DRIVEN

2C—Center pair of rear wheels 2R—Rear pair of rear wheels. 4F—Front and center pair of rear wheels. 4R—Four rear wheels. 6—Six wheels

	-	G	ENE	RAL	(See	Keynote)		TIRE	SIZE	ENGI	NE	TRANSMI	SSION	REA	R AX	LE			FRAME	77
Line Number	MAKE AND MODEL	Tonnage Rating	Chassis Price	Standard	Max. W. B. Furnished	Gross Vehicle Weight	Chassis Wt. (Stripped)	Front	Rear	Make and Model	No. of Cylinders, Bore and Stroke	Make and Model	ward Speeds Aux. Location	Make and Model	Gear and Type	ive & Torqu	GEA RATI	Ros mor ul	Side Rail Dimensions	Type
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4-Denotes new model or change in specifications.

Line Number
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ENGINE DETAILS		FUEI SYST					9	FRONT AXLE	Make	BR	AKES		BODY	MOU DAT		SPR	INGS
Line Number  Comp. Ratio  Torque lb. ft.  N.A.C.C. Rated H.P. Rated H.P.  Rated H.P.  Gliven  Valve Argmit.  Camshaft Drive  Piston Material  Piston Material  Diameter  Camshaft Brive  Camshaft Drive  Camshaft Argmit.  Camshaft	ak		Fuel Feed Ignition Sys- tem Make	Generator, Starter Make	Clutch Type and Make	Radiator Make	Universals Make	Make and Model	Steering Gear	Make Location Type Operat'n	Lining Area Drum Material	Hand Location Type	Cab to Rear of Frame	Cab to Rear Axle	Width of Frame	Front	Rear Auxiliary Type
1 468 4 . 4 322 43 . 3 120 - 2200 H C A 7-3 1 14 14 CC 3 707 4 . 4 500 60 . 175 - 2200 H C A 7-3 1 14 14 CC 3 707 4 . 4 500 60 . 175 - 2200 H C A 7-3 1 14 14 CC	Ha Ha	- 1	M DR M DR	DR DR DR	P.BL dp.Lo dp.Lo	Lo Lo Lo	Spi Spi Spi	Tim 27451	Ros	O4IA O4IA O4IA	720 A 720 A 816 A	CD	172 172 172			42x3 42x3	56x4 56x4 56x4
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33 245 5.1 165 29.4 73-3000 L G A 7-2 4 1014 FI 4 52 525 5.1 165 29.4 73-3000 L G A 7-2 4 1014 FI 55 522 5.1 188 33.8 85-3200 L G A 7-2 4 1014 FI 36 282 5.1 188 33.8 85-3200 L G A 7-2 4 1014 FI 37 358 5.1 254 38.4 110-2800 F G A 7-2 1 125 FI 33 3462 5.0 324 45.9 110-2800 F G A 7-3 134 FI 34 FI	Wa Wa Wa Wa	Zen Zen Ma	M DR M DR M DR M DR M DR M DR	DR DR DR DR DR DR	P.Lo P.Lo P.BL P.BL P.BB P.BB	Ch Ch Ch Ch Ch	Blo Blo Blo Blo Blo Blo	Tim 30000H Tim 31000H Tim 31000H Tim 33000H Tim 35000H Tim 35000H	Ros Ros Ros Ros Ros Ros	L41H L41H L41H L41H L41H L41H L41HV	269 a 330 a 330 a 330 a 376 a 462 E	TX TX TX TX TD FD	Opt Opt Opt Opt Opt Opt	Opt Opt Opt Opt Opt Opt	32 32 32 32 32 32 32 32	42 ½ x2 ¼ 42 ½ x2 ¼ 42 ½ x2 ¼ 42 ½ x2 ½ 42 ½ x2 ½ 42 ½ x2 ½ 42 ½ x2 ½	58x2½ N 58x2½ N 58x2½ N 58x3 N 58x3 N 58x3 N
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Line Number	MAKE AND MODEL	Tonnage Rating	Chassis Price Standard Wheelbase	Max. W. B. Furnished	Gross Vehicle Weight	Chassis Wt. (Stripped)	Front	Rear	Make and Model	No. of Cylinders, Bore and Stroke		Location, For- ward Speeds	Aux. Location and Speeds	Make and Model	Gear and Type	Drive & Torque	In High	In Low	Side Rail Dimensions	Line Number	Disp	1
1 2 3 4 5 6 7 8 9 10 11 12 13	Dodge Bros. K30 (Concl'd) .KH-30 .KD30 .K32 .K32 .K32 .K35 .K45 .F40 .K55 .G5 F-61 .G5 K-71	1½-2 1½-2 1½-2 1½-2 1½-3 1½-3 1½-3 1½-4 2-4 2-4 2-5 3-5½ 3-6 4-8	515 131 490 131 515 131 545 136 560 136 560 136 870 140 870 140 1995 150 1995 150 2575 170 2575 170	161 161 161 161 161 190 190 190 190 195	8400 8500 8500 10500 10500 12500 12500 16000 20000 22000 25000	2600 2612 2885 2858 2896 3580 3675 5173 5344 5789 7640		P32x6 P32x6 P32x6 P32x6 P32x6 P32x6 DB6.50/20 DB7.00/20 DB6.50/20 DP32x6 DP32x6 DP32x6 DP32x6 DP32x6	Own Own Own Own	6-3 \( x 4 \) 6 6-3 \( x 5 \) 8 8-3 \( x 5 \) 8 8-3 \( x 5 \) 8	Own Own Own Own Own Own Own Own	U 4 U 4 U 4 U 5 0 5 U 4 U 4 U 4 U 4 U 4 U 4 U 4 U 4 U 4 U 4	Op Op Op Op Op Op Op Op Op	Own Own Own Own Own Own Own Own Own Own	SF SF SF SF SF SF SF SF SF SF SF SF SF S	HHHHHHHHHHH	5.66 5.66 5.66 6.33 6.33 6.37 7.12 7.71	36.2 36.2 36.2 44.8 44.8 43.7 43.7 48.8 62.7	6 # x2 & x th C 7 x2 # x th C 7 x 2 # x 1 x th C 7 x 2 # x 1 x th C 7 x 2 # x 1 x th C 7 x 2 # x 1 x th C 7 x 2 # x 1 x 1 th C 7 x 2 # x	11 11 11 11 11	2 201 3 217 4 217 5 201 6 242 7 242 8 242 9 309 0 309 1 309 2 309 3 38	75.61 15.81 75.61 75.61 15.81
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† 18 † 19 20 21 22 23 24 25 26 27 28 29 30 31	Esco. 234 Fageol .106BK .135HP .135BK .135BK .250MB .250MS .250MS .250MS .250MS .250MA .370HP .370RA .370RA .470HP .685RB	1½-2½ 1½-2½ 2-3 2-3 2-3 2-3 2-½-4 2½-4 3-5 5-6 5-6 6-7	2860 165 1520 161 1620 161 2250 161 2400 163 2050 161 2050 161 2750 178 2750 178 2750 178 3500 178 3500 178 3500 182 4850 182 5250 182 7100 174	1 195 1 195 1 195 1 195 1 195 1 195 8 196 8 196 8 196 8 196 8 196 2 200 2 200 2 200	15000 11200 12700 13400 15000 13400 16300 16300 16300 20700 25300 25300 25300 25300 42000	5000 5100 5800 6000 5700 7200 6875 6900 7400 7900 8400 9750 9750 10200 10350		DB7.50/20 DB6.50/20 DB6.50/20 DB7.50/20 DB7.50/20 DB7.50/20 DB8.25/20 DB8.25/20 DB8.25/20 DB8.25/20 DB9.00/20 DB9.75/20 DB9.75/20 DB9.75/20 DB9.75/20 DB9.75/20 DB9.75/20 DB9.75/20 DB9.75/20 DB9.75/20	Con E603 Wau 6BK Wau 6BK Wau 6-90 Wau 6-90 Wau 6BK Wau 6-10 Wau 6MS Wau 6MS Wau 6-110 Wau 6-110 Wau 6-125 Wau 6BRK Wau 6-125 Wau 6RB	6-4 \( \) x 4 \( \) 5 \( \) 4 \( \) 5 \( \) 6 \( \) 4 \( \) 5 \( \) 6 \( \) 5 \( \) 5 \( \) 6 \( \) 5 \( \) 5 \( \) 6 \( \) 5 \( \) 5 \( \) 6 \( \) 5 \( \) 5 \( \) 6 \( \) 5 \( \) 5 \( \) 6 \( \) 5 \( \) 5 \( \) 6 \( \) 5 \( \) 5 \( \) 6 \( \) 5 \( \) 5 \( \) 6 \( \) 5 \( \) 5 \( \) 6 \( \) 5 \( \) 5 \( \) 6 \( \) 5 \( \) 5 \( \) 6 \( \) 5 \( \) 5 \( \) 6 \( \) 5 \( \) 5 \( \) 6 \( \) 6 \( \) 5 \( \) 6 \( \) 6 \( \) 5 \( \) 6 \( \) 6 \( \) 6 \( \) 5 \( \) 6	WG T9 WG T9 BL 234 BL 234 WG T9 BL 524 BL 334 BL 524 BL 524 BL 524 BL 524 BL 734 BL 734 BL 734 BL 734	U 4 U 4 U 4 U 4 U 4 U 4 U 4 U 4 U 5 U 6 U 6 U 7 U 7 U 7 U 7 U 7 U 7 U 7 U 7 U 7 U 7	No No No No No No No No No No No No No N	Cla B642  Tim 53200H Tim 54200H Tim 54200H Tim 54200H Tim 56200H Tim 66725H Tim 66725DH Tim 66725DH Tim 66720DH Tim 66720DH Tim 66720DH Tim 66720DH	BF BF BF BF BF BF WF WF	HHEHHHHHRRRRRRRRRRRRRRRRRRRRRRRRRRRRRR	5.66 5.83 6.8 7.4 5.83 7.4 7.4 7.8 7.8 5.7 5.5 6.54	36.2 37.3 43.6 47.4 556.8 56.8 56.8 120. 116. 116.	6 x 3 x ½ C C 6 x 3 x ½ C C 6 x 3 x ½ C C C 6 x 3 x ½ C C C 6 x 3 x ½ C C C 6 x 3 x ½ C C C C X 3 x ½ C C C C X 3 x ½ C C C C X 3 x ½ C C C C X 3 x 3 x ½ C C C X 3 x 3 x ½ C C C X 3 x 3 x ½ C C C X 3 x 3 x ½ C C C X 3 x 3 x ½ C C C X 3 x 3 x ½ C C C X 3 x 3 x ½ C C C X 3 x 3 x 3 x ½ C C C X 3 x 3 x 3 x ½ C C C X 3 x 3 x 3 x 2 x 4 C C C X 3 x 3 x 3 x 4 C C C X 3 x 3 x 3 x 4 C C C X 3 x 3 x 3 x 4 C C C X 3 x 3 x 3 x 4 C C C X 3 x 3 x 3 x 4 C C C X 3 x 3 x 3 x 4 C C C X 3 x 3 x 3 x 4 C C C X 3 x 3 x 3 x 4 C C C X 3 x 3 x 3 x 4 C C C X 3 x 3 x 3 x 4 C C C X 3 x 3 x 3 x 4 C C X 3 x 3 x 3 x 4 C C X 3 x 3 x 3 x 4 C C X 3 x 3 x 3 x 4 C C X 3 x 3 x 3 x 3 x 4 C C X 3 x 3 x 3 x 3 x 4 C C X 3 x 3 x 3 x 3 x 4 C C X 3 x 3 x 3 x 3 x 4 C C X 3 x 3 x 3 x 3 x 4 C C X 3 x 3 x 3 x 3 x 3 x 3 x 3 x 3 x 3 x 3	1 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	8 28: 9 28: 0 25: 1 25: 2 28: 3 35: 4 31: 5 38: 6 35: 7 35: 8 35: 9 46: 0 51: 1 46: 2 46: 3 37:	2 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
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• 50 • 51 • 52 • 53 • 54	FordBB BB BB	1 1/2 1 1/2 1 1/2 1 1/2	460 13 485 15 485 13 510 15 355 11	7 157 . 1 131 . 7 157 .	3950	3072	B6.00/20 B6.00/20 B6.00/20 B6.00/20 B5.50/17	P32x6 P32x6 P32x6 P32x6 B5.50/17	Own Own Own Own Own	4-3 1/4 x 4 1/4 4-3 1/4 x 4 1/4 8-3 1/4 x 3 1/4 8-3 1/4 x 3 1/4 8-3 1/4 x 3 1/4	Own Own	מטטט	4 No 4 No 4 No	Own Own Own Own Own	SF SF SF SF	UUUU	6.6 6.6 6.6 4.1	42. 42. 42. 42. 111.	2 7x2 %x h C 2 7x2 %x h C 2 7x2 %x h C 2 7x2 %x h C 6 6x1 %x 105 C		$\begin{array}{c c} 1 & 20 \\ 52 & 22 \\ 53 & 22 \end{array}$	0 4.6 1 0 4.6 1 1 5.3 1 1 5.3 1 2 1 5.3 1
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<sup>+-</sup>Denotes new model or change in specifications.

Ост

ENGINE DETAILS	Type	SY		LEC- RICAL				FRONT AXLE	Make	Ві	RAKES			MOU DAT		SPI	RINGS
Displacement Comp. Ratio Torque lb. ft. N.A.C.C. Rated H.P. Rated H.P. AN. Brake H.P. at R.P.M. Oliven Valve Argmt. Camshaft Drive Piston Material Number AN Diameter Canst	stem	Governor Make Carburetor Make	Fuel Feed Ignition Sys-	Generator, Starter Make	Clutch Type and Make	Radiator Make	Universals Make	Make and Model	Steering Gear A	Make Location Type Operat'n	Lining Area Drum Material	Hand Location Type	Cab to Rear of Frame	Cab to Rear Axie	Width of Frame	Front	Rear Auxiliary Type
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	CC M CC M CC M CC M CC M	o Car o Car o Car	M DI M DI M DI M DI M DI M DI M DI M DI	DR DR DR DR DR DR DR DR DR DR DR	P.BB P.BB P.BB P.BB P.BB P.BB P.BB P.BB	Fe Fe Fe Fe Fe Lo Lo Lo	Own Own Own Own Own Own Own Own Own Own	Own Own Own Own Own Own Own Own Own Own	Own Own Own Own Own Own Jac Jac	041H 041H 041H 041H 041H 041H 041H 041H	176 a 176 a 176 a 176 a 176 a 176 a 232 a 232 a 232 a 348 a 416 a 416 a 600 a	TX TX TX TX TX TX CD CD CD CD	94 11 94 11 94 11 94 11 14 91 11 11 11 11 11 11 11 11 11 11 11 11	46元 51元 51元 51元	34 34 33 14 33 14	36x1 ¾ 36x1 ¾ 36x1 ¾ 36x1 ¾ 36x1 ¾ 36x1 ¾ 39x2 42x3 42x3 42x3 42x3 42x3 42x3	48x2¼ N 48x2¼ N 48x
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$\begin{array}{c} 17382 \mid 4.6 \mid 250 \mid 43.3 \mid 95-2500 \mid L \mid G \mid N \mid 7-2\% \mid 1231 \\ 18 \mid 282 \mid 5.1 \mid 190 \mid 33.7 \mid 82-2800 \mid L \mid G \mid A \mid 7-2\% \mid 104 \\ 20 \mid 255 \mid 5.3 \mid 182 \mid 27.3 \mid 90-3200 \mid F \mid G \mid A \mid 4-2\% \mid 104 \\ 21 \mid 255 \mid 5.3 \mid 182 \mid 27.3 \mid 90-3200 \mid F \mid G \mid A \mid 4-2\% \mid 71 \\ 21 \mid 255 \mid 5.3 \mid 182 \mid 27.3 \mid 90-3200 \mid F \mid G \mid A \mid 4-2\% \mid 71 \\ 22 \mid 282 \mid 5.1 \mid 190 \mid 33.7 \mid 82-2800 \mid L \mid G \mid A \mid 7-2\% \mid 104 \\ 23 \mid 3585 \mid 2.254 \mid 38.4 \mid 110-2800 \mid F \mid G \mid A \mid 7-2\% \mid 124 \\ 243 \mid 164 \mid 6 \mid 200 \mid 33.7 \mid 70-2200 \mid L \mid G \mid A \mid 7-2\% \mid 124 \\ 25 \mid 3814 \mid 4 \mid 2404 \mid 40.8 \mid 82-2200 \mid L \mid G \mid A \mid 7-2\% \mid 124 \\ 263 \mid 3585 \mid 5.2 \mid 254 \mid 38.4 \mid 110-2800 \mid F \mid G \mid A \mid 7-2\% \mid 124 \\ 273 \mid 3585 \mid 2.254 \mid 38.4 \mid 110-2800 \mid F \mid G \mid A \mid 7-2\% \mid 124 \\ 283 \mid 3585 \mid 5.2 \mid 254 \mid 38.4 \mid 110-2800 \mid F \mid G \mid A \mid 7-2\% \mid 124 \\ 283 \mid 3585 \mid 5.2 \mid 254 \mid 38.4 \mid 110-2800 \mid F \mid G \mid A \mid 7-2\% \mid 124 \\ 284 \mid 402 \mid 5.2 \mid 324 \mid 46.0 \mid 125-26000 \mid F \mid G \mid A \mid 7-3 \\ 314 \mid 4625 \mid 5.2 \mid 324 \mid 46.0 \mid 125-26000 \mid F \mid G \mid A \mid 7-3 \\ 313 \mid 4625 \mid 5.2 \mid 324 \mid 46.0 \mid 125-26000 \mid F \mid G \mid A \mid 7-3 \\ 313 \mid 3771 \mid 4.4 \mid 4040 \mid 60.0 \mid 125-26000 \mid F \mid G \mid A \mid 7-3 \\ 33 \mid 3771 \mid 4.4 \mid 4040 \mid 60.0 \mid 125-26000 \mid F \mid G \mid A \mid 7-3 \\ 33 \mid 3771 \mid 4.4 \mid 4040 \mid 60.0 \mid 125-26000 \mid F \mid G \mid A \mid 7-3 \\ 313 \mid 3771 \mid 4.4 \mid 4040 \mid 60.0 \mid 125-26000 \mid F \mid G \mid A \mid 7-3 \\ 313 \mid 3771 \mid 4.4 \mid 4040 \mid 60.0 \mid 125-26000 \mid F \mid G \mid A \mid 7-3 \\ 313 \mid 3771 \mid 4.4 \mid 4040 \mid 60.0 \mid 125-26000 \mid F \mid G \mid A \mid 7-3 \\ 313 \mid 771 \mid 4.4 \mid 4040 \mid 60.0 \mid 125-26000 \mid F \mid G \mid A \mid 7-3 \\ 313 \mid 771 \mid 4.4 \mid 4040 \mid 60.0 \mid 125-26000 \mid F \mid G \mid A \mid 7-3 \mid 134 \\ 313 \mid 771 \mid 4.4 \mid 4040 \mid 60.0 \mid 125-26000 \mid F \mid G \mid A \mid 7-3 \mid 134 \\ 313 \mid 771 \mid 4.4 \mid 4040 \mid 60.0 \mid 125-26000 \mid F \mid G \mid A \mid 7-3 \mid 134 \\ 313 \mid 771 \mid 4.4 \mid 4040 \mid 60.0 \mid 125-26000 \mid F \mid G \mid A \mid 7-3 \mid 134 \\ 313 \mid 771 \mid 4.4 \mid 4040 \mid 60.0 \mid 125-26000 \mid F \mid G \mid A \mid 7-3 \mid 134 \\ 313 \mid 771 \mid 4.4 \mid 4040 \mid 60.0 \mid 125-26000 \mid F \mid G \mid A \mid 7-3 \mid 134 \\ 313 \mid 771 \mid 4.4 \mid 4040 \mid 60.0 \mid 125-26000 \mid F \mid G \mid A \mid 7-3 \mid 134 \\ 313 \mid 771 \mid 4.4 \mid 4040 \mid 60.0 \mid 125-26000 \mid G \mid G \mid A \mid 7-3 \mid 134 \\ 313 \mid 771 \mid 4.4 \mid 4040 \mid 6$	FP N FP W FP N FP N FP N FP N FP N FP N FP N FP N		M DI M DI M DI M DI M DI M DI M DI M DI	DR D	P.BB P.Lo P.BL P.BL P.BL P.BL P.BL P.BL P.BL P.BL	Pe Pe Pe Pe Pe Pe Pe Pe Pe Pe Pe Pe Pe P	Spi Blo	Cia F308  Tim 30000H Tim 30000H Tim 31000H Tim 31000H Tim 31000H Tim 31000H Tim 33020H Tim 33020H Tim 33020H Tim 33020H Tim 35020H Tim 35000H Tim 35000H Tim 35000H Tim 35000H Tim 35000H Tim 35000H Tim 26450H	Ros Ros Ros Ros Ros Ros Ros Ros Ros Ros	LAIHV LAIH LAIH LAIH LAIHV WS41A	350 a 272 G 272 G 306 G 355 G 355 G 355 G 398 G 484 G 484 G 484 G 663 G 717 G	TX TX TX TX FD TX FD FD FD	136% 144 144 144 144 167% 167% 167% 172% 172% 172% 172% 172%	81½ 81½ 81½	34 34 34 34 34 34 34 34	40 ½ x3 37 x2 ½ 37 x2 ½ 37 x2 ½ 37 x2 ½ 41 x3 ¼ 41 x3 ¼ 41 x3 ¼ 41 x3 ¼ 42 ½ x3	55½x3 ½ 56x3 ½ 60x3 ½ 6
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ENGINE DETAILS	SY	EL ELEC	ĀL			FRONT AXLE	Make	В	RAKES		BODY	MOL DAT	INT-	SPR	INGS
ement Ratio Ib. ft. H.P. H.P. Matterial Spully Material	Governor Make	Fuel Feed Ignition System Make	Starter Make Clutch Type and Make	Radiator Make	Universals Make	Make and Model	Steering Gear A	Make Location Type Operat'n	1 2	Hand Location Type	Cab to Rear of Frame	Cab to Rear Axle	Width of Frame	Front	Rear Auxiliary Type
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	No Zen	M AL A	L P.BL L P.BL L P.BL L P.BL	Lo	Cle Cle Cle Cle	Tim 33020H Tim 35120H Tim 35120H Tim26450TW		LAIH LAIH LAIH WAIA	364 a 464 a 555 a 620 a	TD	168 168 168 168	104 104 104 111	34 34 34 34	41 1/2 x 2 1/2	54x3 54x3 54x3½ 56x3½
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Wa Zen Wa Zen Wa Zen Ha Zen	M DR II M DR II M DR II M DR II	OR P.BL OR P.BL OR P.BL OR P.BL OR P.BL OR P.BL	Mo Mo Mo	Cle Cle Cle Cle Cle Cle	Tim 30020H Tim 31000H Tim 33000H Tim 33000H Tim 35000H Tim 27450	Ros Ros Ros Ros Ros Ros	L4IHV L4IHV L4IHV L4IHV W84IA W84IA	306 c 355 c 398 c 484 c 663 c 757 c	TD TD TD CD	Opt Opt Opt Opt Opt Opt	Opt Opt Opt Opt Opt Opt	34 34 34 36 38	42x2¼ 42x2¼ 42x2¼ 44x3 44x3 44x3	50x2 ½ ½ ½ 50x2 ½ ½ 50x2 ½ ½ ½ 50x2 ½ ½ ½ 52x3 ½ ½ ½ 52x3 ½ ½ ½ 52x4 ½ ½
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	No Zer	M AL A	L D.Jo L D.Fu L D.Fu L D.Fu L D.Fu	Yo	Blo Blo Blo	Tim 30000H Shu 5429 Shu 5532 Shu 5532	Ros Ros Ros Ros	LAIH LAIH LAIH LAIH	406 G	FD TD TD	81¾ 84 88 108	51 1/2 53 1/2 57 1/2 74	34 31 31 31	36x21/4 40x21/4 40x21/4 40x21/4	45x2½ 54x3 54x3 54x3
$\begin{array}{c} 153855.027439.2125-2800LGCA-2\%14\%G\\ 162984.719033.770-2600LGG7-2\%13\%G\\ 173614.7230040.377-2400LGA7-2\%13\%G\\ 183614.7230040.377-2400LGA7-2\%$	Ha Zer Ha Zer Ha Zer	M DR I	OR P.Lo	Lo Lo Lo Lo Lo Lo	Cle Cle Cle Cle Cle Cle Spi	Tim 14706 Tim 14706 Tim 14706 Tim 15735 Tim 15733 Tim 26050 Tim 26050	Ha Ha Ha Ha Ha Ros	B4IM B4IM B4IM B4IA B4IA B4IA	399 D 399 D 473 D 473 D 473 D 720 D	TD TD CD CD CD CD TX	116¾ 113¼ 143¼ 119¼ 118¼ 168¼ 127	6214 5914 8914 65 16334 3334 7214	34 34 34 34	38x21/4 38x21/4 38x21/4 41x21/4 41x21/4 41x21/4 41x3	56x3 56x3 56x3 56x3 56x3 56x3 56x3
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	No Str	M DR I	DR P.OW DR P.OW DR dp.Lo DR dp.Lo DR dp.Lo	Ow Ow Me Me Me	Cle Cle Cle Cle Cle	Own Own Own Own Own	Ros Ros Ros Ros Ros	LAIH LAIH LAIH LAIH LAIHV	246 C 289 a 289 a 344 a 390 a	2I 2I 21 FD FD	102 105 116 124 143	60 60 68 83	34 34 34 34 34	40x2 40x2¼ 40x2¼ 44x3 44x3	50x21/2 52x21/2 52x21/2 54x3 56x31/2 1
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	No Zel No Zel No Zel Mo Str	M DR M AL M A	DR D.BB DR D.BB AL D.BB AL D.Fu D.Fu AL D.Fu D.Fu D.Fu	Yo Yo Yo Yo Yo Yo Yo Yo Yo Yo Yo Yo Yo	Spi Spi Spi Spi Spi Spi Spi Spi Spi Spi	Tim Tim Tim Shu	Ros Ros Ros Ros Ros Ros Ros Ros Ros Ros	LAIH LAIHV LAIHV LAIHV LAIHV LAIHV LAIHV W84IA JAIHV LAIHV LAIHV LAIHV	380 G 452 G 452 G 578 G 658 G 658 G 768 H 768 H 893 G 847 G 893 H 893 H	TX TX TX TX TX TD TD TD TD	129 ½ 129 ½ 129 ½ 106 106 106 106 106 106 108 92 Å	Opt Opt Opt Opt Opt Opt Opt Opt Opt Opt	31 1/3 31 1/3 31 1/3 31 1/3 31 1/3 31 1/3 31 1/3 31 1/3 31 1/3 31 1/3	40x2 ½ 40x2 ½ 40x2 ½ 40x2 ½ 40x2 ½ 40x2 ½ 40x2 ½ 40x2 ½	50x3 50x3
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	No   Ze   Ha   Ze   Ha   Ze   Ha   Ze   C	M DR	DR P.Lo DR P.Lo DR P.Lo DR P.Lo DR P.Lo DR D.Ow	Pe Pe Mo	Spi Spi Spi Spi Spi Spi	Tim 30000H Tim 30000H Tim 31000H Tim 31000H Tim 33000H Tim 33000H Tim 33000H Tim 35000H Tim 35000H Tim 35000H Tim 35000H Tim 35000H Tim 35000H Tim 26450N Tim 26450N Tim 26450N Tim 27550N Tim 27450N Tim 27450N	Ros Ros Ros Ros	IAIH LAIHV LAIHV LAIHV O2IMV LAIHV O2IMV W84IA O2IMV O2IMV O2IMV W84IA O2IMV W84IA O2IMV O2IMV	269 P P 269 P P 282 P P 2830 a 396 a 397 a 466 a 367 a 664 a 576 a 666 a 666 a 666 a 6718 a 718 a 718	TX TX TX CX CX CX CX JX CX JX CX JX CX JX CX JX CX CX JX CX	96 96 144 144 144 144 172 172 172 172 168 168 163	57 57 57 91 91 91 91 91 108 108 108 108 107 107 107	34 34 34 34 34 34 34 34 34 34 34 34 34 3	38x2 14 38x2 14 38x2 14 42x2 14 42x2 14 42x2 14 42x2 14 42x2 14 48x3 48x3 48x3 48x3 48x3 48x3 48x3 48x	50x2 \\ 6 \) 50x2 \\ 6 \\ 1 \) 50x2 \\ 6 \\ 1 \\ 50x2 \\ 6 \\ 1 \\ 50x2 \\ 6 \\ 50x2 \\ 6 \\ 50x2 \\ 6 \\ 54x3 \\ 54x3 \\ 54x3 \\ 54x3 \\ 54x3 \\ 54x3 \\ 60x4 \\ 54x3 \\ 54x3 \\ 60x4 \\ 54x3 \\ 60x4 \\ 54x3 \\ 60x4
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	C No St. C No St. C No St. C No St. P Mo St. P No St. P No St. P Mo St. P Wa St. P Wa St.	P DR P DR P DR P DR P DR P DR P DR P DR	DR PBB DR PFBL DR PFBL DR PFBL DR P FBL DR P BL DR P BL	Fe Fe Fe Fe Fe Fe Fe Fe Mo Mo	Spi Spi Spi Spi Spi Spi Spi Spi Spi Spi	Cla Cla Cla Spi Cla Cla Cla Cla Cla Cla Cla Cla Eat Eat Eat Eat Eat	Ros Ros Ros Ros Ros Ros Ros Ros Ros Ros	L41H L41H B41M B41M L41H B41M B41M B41M B41MV B41MV B41MV B41MV	670 a	TX TX TX 4X TX TX TX TX TX TX TX TX	92 92 104 104 104 127 129 126 128 128 128 128 128 128 128	589 589 791 791 791 791 751 761	4 32 1 4 32 1	6 38x2 ½ 38 ½x2 ½ 6 38x2 ½ 4 40x3 4 40x3 4 40x3 4 40x3	50x2 ½ 50x2 ½ 50x2 ½ 50x3 50x3
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	C No St C Ha St C Ha St C Ha St P Wa St	r M DR	DR P.Lo DR dp.Lo DR dp.Lo DR dp.Lo DR P.Li	Me Me Me Me	MM		Ros Ros Ros Ros	B4IMV B4IMV B4IMV	231 a 231 a 284 D 420 a 420 D	41	853 853 973 973 973	60	33 t 34 34	36x1 % 36x1 % 39x2 39x2 % 39x2 %	45x2 14 45x2 14 56x3 56x3 56x3
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	P Wa Ze	en M DR	DR P.BL DR D	Pe Pe Pe	Spi Spi Spi Spi Spi Spi Spi Spi Spi Spi	Tim 33000H Tim 33000H Tim 33000H Tim 35000H Tim 35000H Tim 35000H Tim 35000H Tim 35000H Tim 35000H Tim 35100TV Tim27452H Tim 35100TV Tim27452TV Tim27452TV	Rose Rose Rose Rose Rose Rose Rose Rose	LAIHV LAIHV LAIHV LAIHV LAIHV LAIHV LAIHV LAIHV LAIHV LAIHV TAIMV TZIMV	282 a 330 a 391 a 391 a 391 a 460 a 460 a 560 a 560 a 617 a 470 a 617 a 470 a 617 a	TD T	144 144 168 168 168 168 207 192 207 124 192	90 90 105 105 105 105 115 117 117 117 115 88	16 33 16 33 16 33 16 33 16 33 16 33	41x2 \ 4 41x2 \ 5 41x2 \ 5 41x2 \ 6 41x2 \ 6 41x2 \ 6 41x2 \ 6 41x2 \ 6 42x3 \ 42x3 \	52x3 52x3 52x3 52x3 52x3 52x3 52x3 52x3
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	P . Mo St. P	r M DR r M DR r M DR	DR P.Lo DR P.Lo DR P.Lo DR P.Lo DR P.Co DR P.Ow DR P.O	Ow Ow Ow Ow Ow Ow Ow Ow Ow Ow	spi spi spi spi spi spi spi spi spi spi	Own 4D Own 4D Own 4D Own 4D Own 7D Own 18D Own 7D Own 7D Own 1D Own 7D Own 11D Own 6D Own 9D	Ro Ro Ro Ro Ro Ro	3 L41HV 5 L41HV 5 L41HV L41H 6 L41HV 1 L41HV 1 L041H 5 L41HV 5 L041H 6 L041H 6 L041H 8 L041H 8 L041H 8 L041H 8 L041H 8 L041H 8 041HV 8 041A 8 041A 8 041A 8 041A 6 041A	343 a 428 a V 414 a V 484 a V 553 a V 414 a 483 a 553 a 551 a 591 a	CI CI 2I CI CI	98 98 98 115 128 115 107 123 134 140 150 160 150 144 160 156 172		34 34 34 34 34 34 34 34 34 34 34 34 34 3	39x2 1/4 39x2 1/4 39x2 1/4 41x2 1/2 39x2 1/4 41x2 1/2 41x2 1/2 41x3 1/2 42x3 1/2 42x	50x2 1/2 50x2 1/2 50x2 1/2 50x2 1/2 50x2 1/2 54x3 54x3 54x3 54x3 54x3 54x3 54x3 54x3

Type

		G	ENER	RAL	(See	Keynote)		TIRE	SIZE	ENGI	NE	TRANSMI	SSI	ON	REA	R A	KLE			FRAME	1
MAKI AND MODE		Tonnage Rating	Chassis Price	Standard Wheelbase	Max. W. B.	Gross Vehicle Weight	Chassis Wt. (Stripped)	Front	Rear	Make and Model	No. of Cylinders, Bore and Stroke	Make and Model	Location, For- ward Speeds	Aux. Location and Speeds	Make and Model	Gear and Type	orc	GE RAT		Side Rail Dimensions	Type
White (Concl'd.)	643 691 632X		6950 7250 6600	180 129	214 129		11210 12300	B10.50/24 B10.50/24	DB10.50/24 DB10.50/24 DB10.50/24			Own 10B Own 10BB Own 4B	U 5 U 5 U 4	No No No	Own 13C Own 13CB Own 13C	2F 2F 2F	R	0.2	63.4 63.4	81/4 x3 1/4 x 1/4 81/4 x3 1/4 x 1/4 81/4 x3 1/4 x 1/4	CC
Willys			375	100	100		1584	B5.25/17	B5.25/17	Own 77	4-31/x4%				Own 77	814	H	1.3	12.5	3%x1%x4	T
Four-Who						10000		20.00.04	20.00.01	D 1 77000		D. DW 10			Wil- ODIF	OF		0-4	0-4	10-01/24	
Coleman	E52 E53 E54 E55 E558 E56 E57	2½ 3½ 4-5 5-6 6-7½ 7½-10	3800 5300 5600 6150 7200 7800 9700	130 130 130 144 144	180 180 180 180 180	12800 18900 20400 23000 24500 29800 32000	8000 8800 9600 10600 11600	B9.75/24 B10.50/24 B11.25/24 B11.25/24	B9.00/24 B9.75/24 B10.50/24 B11.25/24 B11.25/24 DB10.50/24 DB11.25/24			Fu RU 16 Fu MRU16 Fu MRU16 Fu MRU16 Fu MHU16 Fu MHU BL 714	U 4 U 4 U 4	A 2 A 2 A 2	Wis CR122 Wis CR122 Wis CR122	2F 2F 2F 2F 2F 2F 2F	1	Ope	Ope		BBBBBB
Corbitt (3)	.10FB6 9FB6 .12FB6 .12FD6 .15FD6 .18FD6	1½-2 2-2½ 2½-3½ 2½-3½ 3-4 3½-5		Op Op Op Op	Op Op Op Op		5060 5630 5730 8100 9200	B7.50/20 B8.25/20 B9.00/20	DB6.50/20 DB7.00/20 DB7.50/20 DB7.50/20 DB8.25/20 DB9.00/20	Con 25A Con 20C Con E602 Con E602 Con 21R Con 22R	6-3 % x4 % 6-4 % x4 ½ 6-4 % x4 ½ 6-4 % x4 ¾ 6-4 % x4 ¾	FuL 5A53 FuL 5A53 FuL 5A53	U 5 U 5	A 2 A 2	Tim 53200H Tim 54200H Tim 56200H Wis 4916L Wis 70000L Wis 1237H	SF SF SF 2F 2F 2F	H	7.40 7.36 8.00 8.00	Opt Opt Opt		TTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT
FWD	HS H4 H6 HH-6 CU-6 CU6A SSUA SSUA	11/4-2 11/4-2 2-21/4-3 3 31/4-4 4-5 4-5 5-71/4	3325 3385 4135 4200 4985 4685 5135 4835 7400	120 133 138 124 147 147 147 147	195	11000 13000 16000 15500 19500 19000 22000 21500 29500	5300 5900 6900 6460 8000 7800 8300 8100	P9.75/20 S36x6 B10.50/20 B10.50/20 B11.25/20 B11.25/20 B12.75/20	DB6.50/20 P34x7 P9.00/20 P9.75/20 S36x6 B10.50/20 B10.50/20 B11.25/20 B11.25/20 B12.75/20	Wau BK Wis SU Wau MS Wau MK Own A Wau SRS Wau SRS Wau SRL Wau SRL Wau SRK	6-3 ¾ x 4 ¼ 4 4 x 5 6 -3 ¾ x 4 ¾ 6 -4 ½ x 5 ½ ½ 6 -4 ½ x 5 ½ 6 -4 ½ x 5 ½ £ 6 -4 ½ x 5 £ £ 6 -4 ½	Cot A BL 51 BL 55 Cot DAF Own U	A 4 U 4 A 3 A 5 U 5 U 5	Op R 2 Op Op Op Op Op	Tim 53620 Own H Own H Own U Own B Own U Own U Own U Own M	S BF BF BF BF BF BF	H H H H H H H	5. 14 7. 86 8. 92 6. 95 8. 9 7. 35 6. 72 7. 35 7. 35	31.8 38.0 47.7 84.7 35.6 73. 55.2 73. 207.	5 4 x 2 ¼ x 4 5 4 x 2 ¼ x 4	000000000000000000000000000000000000000
(Fr'tWhI	Or.) LBU MJ5 M7 .(T)60-T .(T)72-T	5-6 5-6 7½-10 20-25 25-30		171 165 165	195 195 Op	23500 26500	9000 11300 12400 10000	B10.50/20 B9.00/20 B10.50/20 P40x10 B10.50/20 B9.75/20	DB9.00/20 DB9.00/20 DB1050/20 DP40x10 DB10.50/20 DB9.75/20	Wau SRS Wau SRK	6-4 1/4 x 5 1/4 6-4 1/4 x 5 1/4 6-5 x 5 1/4 6-4 1/4 x 5 1/4 6-4 1/4 x 5 1/4	BL 55 BL 734 BL 714 Own U BL 724	U 4 U 4	Op A 2	Own U Wis Wis 131W Own M Wis 1237	D 2F 2F BF 2F	H H H H	7.35 7.50 8.36 7.35 6.7	39.5 188. 173. 73 47.4	7x3x 11 8x3x 11 10x3x 11 7x3x 11 8x3x 14	0000
Indiana	12X4 14X4 16X4 18X4 18X4A 20X4	11/2 21/2 3 31/2 41/2 5	2650 3950 4850 5850 5400 7200 1000	141 141 156 160 160 188 0 200	::: 224	10000 14000 16000 21000 21000 24000 31000	5900 7500 9000 8700 9800	0 B6.50/20 0 B7.50/20 0 B8.25/20 0 B9.00/20 0 B9.75/20 0 B10.50/20	DB6.50/20 DB7.50/20 DB8.25/20 DB9.00/20 DB9.00/20 DB9.75/20 DB10.50/20	Her JXC Her WXB Her WXC2 Her YXC Her YXC Her RXB Her HXC	6-3¾ x4¼ 6-3¾ x4½ 6-4⅓ x4⅓ 6-4¾ x4¾ 6-4¾ x4¾ 6-4¾ x5¾ 6-5¼ x6	BL	IET 4	AIRT S	Tim 53200H Wis Wis Wis Tim Wis Wis	SF SF 2F 2F SF 2F 2F	H H H H H	5. 14 5. 40 6. 06 7. 83 6. 14 8. 00 9. 11	54.0 50.0 89.0 110. 38.6 128. 86.0	7 ta x2 ½ x ta 7 ta x2 ½ x ta 8x3x ¼ 8 ½ x3x ¼ 8 ½ x3x ¼ 8 ½ x3x ta 8 ½ x3x ta 8 ½ x3x ta 8 ½ x3x ta	18
MarHerr	A10 A30 A40 TH300 TH310 TH310A ) TH315	1½-2 2½-3 3½-4 4-4½ 4-4½ 14½-5-5½ 66 7	2356 3256 4306 4806 5706 6156 7156 8056 9356 1150	135 135 155 155 155 163 163 163	155 155 167 167 175 193 193 193 193		7000 7500 8150 8985 9620 10120	0 B6.50/20 0 B7.50/20 0 B8.25/20 0 B9.00/20 0 B9.00/20 5 B9.75/20 0 B9.75/20 0 B9.75/22 0 B10.50/24	DB6.50/20 DB7.50/20 DB8.25/20 DB9.00/20 DB9.00/20 DB9.75/20 DB9.75/20 DB9.75/20 DB9.75/20 DB10.50/20	Her JXA Her JXC Her WXC Her WXC3 Her YXC Her YXC3 Her FXC Her HXB Her HXC	6-3 % x4 ½ 6-3 % x4 ½ 6-4 ½ x4 ½ 6-4 ¼ x4 ½ 6-4 ½ x4 ½ 6-4 ½ x4 ½ 6-4 ½ x4 ½ 6-4 ½ x5 ½ 6-5 ¼ x6	WG T9 Cla R111 Fu 5-A-386 Fu 5-A-386 Fu 5-A-386 Fu 5-A-386 Fu 5-A-536 Fu 5-A-536 Fu 5-A-54 BL 724	מששש ש	A A A A A A A A A A A A A A A A A A A	Own-Tim Own-Tim Own-Tim Own-Tim	BF BF BF 2F 2F 2F 2F 2F 2F	HHHHHH	8.0 8.0 8.0 8.0 8.0 8.0	136. 143. 153. 146. 146.	7 ½ x 2 ½ x ½ 7 ½ x 2 ½ x ½ 9 ½ x 3 x ½ 9 ½ x 3 x ½ 9 ½ x 3 x ½ 8 ½ x 3 x ½ 8 ½ x 3 x ½ 8 ½ x 3 x ½ 10 x 3 x ½	3
Oshkosh	JE JC WLD JC WLD WLX B38 B3D C38 C3E FC FI FI BG6 GI	1½-2 3-3½ 3-3½ 3-3½ 4-5 4-5 5-6 6-7½ 7½-10	228 238 488 4496 549 525 594 619 659 735 850	0 146 0 146 0 146 0 146 0 146 0 148 0 146 0 146 0 146 0 146 0 146 0 146	170 170 1201 165 165 165 165 165 165 165 175	10550 10565 18500 18300 19475 19700 21850 22200 22725 25000 30000 37000	4978 4990 6900 8173 8400 8350 8700 9223 9500 11500 13200	5 B7.00/20 0 B7.00/20 0 B7.00/20 0 B9.75/20 5 B10.50/20 0 B11.25/20 0 B11.25/20 0 B11.25/20 0 B11.25/20 0 B10.50/20 0 B10.50/20 0 B10.50/20 0 B10.50/20 0 B10.50/20	DB7.00/20 DB7.00/20 B9.75/20 B9.75/20 B10.50/20 B10.50/20 B11.25/20 B11.25/20 B11.25/20 DB10.50/20 DP40x10 DP40x10 B13.50/20	Her JXB Her JXC Her WXC3 Her WXC3 Her WXC3 Her YXC2 Her YXC2 Her FXC Her FXC Her FXC Her RXC Her RXC					2 Own JB 2 Own JC 2 Own WLD 1 Own WLX 2 Own B3S 2 Own C3S 2 Own C3D 0 Own FC 2 Own FB 2 Own FB 3 Own G3 3 Own GD	F 2F 2F 2F 2F 2F 2F 2F 2F 2F 2F 2F 2F 2F	HHHHHHHHH	5.14 8.40 6.36 6.10 7.00 6.10 6.40	51.4 93.1 50.1 86.2 98.0 98.6 90.2	7 6x3 ½ x ¼ 1 6x3 ½ x ¼ 1 7x3 x ¼ 1 7x3 x ¼ 2 7x3 x ½ 2 7x3 x ½ 3 7x3 x ½ 2 7x3 x ½ 3 7x3 x ½ 2 7x3 x ½ 2 7x3 x ½ 3 7x3 x ½ 3 7x3 x ½ 3 10x3 ¼ x ½ 3 10x3 ¼ x ½	
Walter	FCKI	2½-3½ 13½-5 05-6 5-7	460 550 660 720 800	0 126 0 126 0 126 0 136 0 136		16000 20000 25000 27000 30000	6500 7500 9000 9500 10500	0 B9.75/20 0 B9.00/20 0 B9.75/24 0 B9.75/24 0 B10.50/24 0 B11.25/24	B9.75/20 DB9.00/20 DB9.75/24 DB9.75/24 DB10.50/24	Own 6MK Own 6SRL Own SRK Own 6SRK Own 6RB Own 6RB	6-4 1/8 x 4 3/ 6-4 3/8 x 5 1/ 6-4 5/8 x 5 1/		UUUUU	5 N 5 N 5 N 5 N	Own FN Own FM Own FK Own FH Own FH Own FH	2D 2D 2D 2D 2D 2D 2D	H H H H	7.0 6.0 8.5 8.5 8.5	70.0 60.0 85.0 85.0	7x2¾x¼ 0 12x2¾x¼ 0 11x3x¼ 0 13x3x¼ 0 13x3x¼ 0 13x3x¼	
Six-Wl	neele	rs																			
B'kway 180 Corbitt(3)16S 20 28S 28SF 366 36S 40	.16SFD FD8 SW6 4I SW6 4I FD6 SW6 4I FD6	6 2-3 6 2½-4 3 3-5 3 5-7½ 6 5-7½ 6 7½-10 6 7½-10	550 590 572 638 890 880 1230	10 00 00 00 00 00 00 00 00 00 00 00 00 0	2 224 Op		5110 7040 9000 10000 11700 11500 14600 13000	5 B8.25/20 0 B6.50/20 0 B7.50/20 0 B7.50/20 0 P34x7 0 B8.25/20 0 P36x8 0 B9.00/22 0 P38x9 0 B9.75/22	BD8.25/20 DB6.50/20 DB7.50/20 DB7.50/20 DB34x7 DB8.25/20 DP36x8 DB9.00/22 DP38x9 DB9.75/22	Con 32B  Con E602 Lyc AEF Con 20R Con 21R Con 22R Con 21R Her HXB Con 16H Her HXC	6-41/8 x 41/8 x	Fu 5-A-38 Fu 5-A-53 BL 615 BL 607 Fu 5A53 BL 607 BL 734 BL 734 BL 734	UUU AUAUA	5 A N N A N A N A N	Tim SBT-25 2 Tim SD75H 2 Tim SD75W 0 Tim SW151T 1 Tim SW251T 2 Tim SD251V 0 Tim SW310V 3 Tim SD320V 0 Tim SW420V 3 Tim SD420V	2F W W/2 W W/2 W 2F W W/2 W 2F	R R R 2F R 2F R 2F R	7.3 7.3 Opt Opt 8.4 Opt 8.1 Opt	6 Opt Opt Opt Opt Opt Opt Opt	10%x3x A	
Day Elder.	.150 .285 41 .345 41 .402 41	3 8 8 10 R 12	164 529 639 749	5 17 5 20 5 20 5 20	6 189 5 234 5 234 5 234	15000 29500 34500 40200	530 1200 1250 1420	0 B6.00/20 0 B8.25/20 0 B9.00/20 0 B9.75/20	DB6.00/20 DB8.25/20 DB9.00/20 DB9.75/20	Her JXB Her RXC Her RXC Her RXC	6-3 % x4 1 6-4 % x5 1 6-4 % x5 1 6-4 % x5 1	WG T9 4 BL 534 BL 534	UUU	4 N 4 N 5 N	Tim SBT75 o Ti SW D251 o Ti SW D320 o Ti SW D420	H W	F R R	5.6 7.5 8.5 9.0	6 36. 0 47. 0 54. 63.	2 7x3 ½ x ¼ 6 10x3 ¾ x ⅓ 0 10x3 ¾ x ⅙ 6 10x3 ¾ x ⅙ 2 10x3 ¼ x ⅙	I I
DodgeBros Fageol . 22	6HP 21 6HP 21 6HP 41 16AL 41	R 5-6 R 8 R 8	315 435 780 880 900	0 19 0 19 0 19 0 19 0 23	1 221 5 220 5 220 5 220 5 220 2 232 2 232	22600 30400 40500 40500 2 56000	760 970 1410 1195 1530	0 B9.00/20 0 B7.50/20 0 B9.00/20 0 B9.75/20 0 B9.75/20 0 B9.75/20 0 B9.75/20	DB9.00/20 DB7.50/20 DB9.00/20 DB9.75/20 DB9.75/20 DB9.75/20 DB9.75/20	Wau 6-110	6-3 % x4 3 6-4x4 34 6-43% x5 3 6-43% x5 3 6-5x5 34 6-5x5 34	BL234 BL524 BL 734 BL 734 BL 734 BL 734 BL 734	ממממממ	4 N 4 A 4 A 4 A	o Tim SBT15 o Tim SBT25 3 Tim Own 3 Tim Own 3 Tim Own 3 Tim Own	1 BF	FR	7.4 7.8 5.7	47. 56. 120. 120.	4 6x3x ½ 8 8x3x ¼ 4 8x3 ½ x ¼ 4 15x4x ¾ 2 8½ x 4x ¾ 2 15x4x ¾ 2 15x4x ¾	
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+-Denotes new model or change in specifications.

#### **NEWS**

(CONTINUED FROM PAGE 46)

#### Dodge Sales Up

Sales of Dodge trucks showed a further increase for the week ending Sept. 29 with the delivery of 1182 units or an increase over the previous week of 25.3 per cent. This places Dodge truck deliveries for the year-to-date at 36,440 against 16,705 for the same period last year. This is an increase of 118.1 per cent.

#### Reo-Mack Sign Sales Contract

A contract has been signed between the Reo Motor Car Co. of New York, Inc., and the Mack-International Motor Co. under which the latter organization will have exclusive distribution of Reo trucks in Kings and Nassau Counties. (Kings County is coterminus with the borough of Brooklyn and Nassau County is adjacent to Greater New York on Long Island.)

#### Safety Program for Small Fleets

(CONTINUED FROM PAGE 48)

a road intersection was employed, with miniature trucks, touring cars, buses, trolley cars and other vehicles serving to depict the accident.

When first starting their safety meetings, the Roemer company found it advantageous to take the men to a popular show and then to a banquet, where there would be an hour of discussion on ways and means of avoiding accidents.

The company also tried the bonus plan, but came to the conclusion that the penalty system was the more effective. The penalty for infraction of company rules or safe driving rules ranged from two or three days off to dismissal or permanent demotion from driver to driver's helper.

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Mr. Roemer reported his accident experience as follows: The road mileage per accident in 1929 was approximately 6000 per truck accident; in 1930, 10,000 miles per accident; in 1931, 17,000 miles per accident, and in 1932, 69,000 miles per truck accident on the road. In 1932, the company was responsible for one accident out of the six reported, the driver having traveled 354,000 miles with only one accident which cost the company \$40, in all.

FOLLOWING are a few of the records of small fleet operators who have conducted accident prevention work effectively, from the files of the National Safety Council:

H. Zeef & Sons Gravel Co., Grand Rapids, Mich. — 7 vehicles—433.838

COMMERCIAL CAR JOURNAL

ENGINE DETAILS					ype		FUEL SYST.			ELEC- TRICAL				FRONT AXLE	Make	ВІ	BODY MOUNT-			SPRINGS										
Line Number	Displacement	Comp. Ratio	Torque lb. ft.	N.A.C.C. Rated H.P.	Max. Brake H.P. at R.P.M. Given	Valve Argmt.	Camsh	Piston Mate		Length SZZ	Oiling System Ty	Governor Make	Carburetor	Fuel Feed	Ignition Sys- tem Make	Generator, Starter Make	Clutch Type and Make	Radiator Make	Universals Make	Make and Model	Steering Gear M	Make Location Type Operat'n	Area Drum Material	Hand Location Type	Cab to Rear of Frame	Cab to Rear Axle	Width of Frame	Front		Auxiliary Type
3	139 128	4.4	210 283	33.7 38.4 45.9	73-280 73-280 76-240 94-220 94-220 110-220 115-220 163-200 180-200	D L D L	GGGGGGGG	A 7- A 7- A 7- A 7- A 7- A 7- A 7- A 7-	21/4 21/4 22/4 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	10 11 10 11 13 14 14 12 12 12 17 13 17 13	PC PC PC PC PC PC PC PC	No Op Ha Ha Ha Ha Ha	Str Str Str Str Str Str Str Str	M M M M	AL AL AL	AL AL AL AL AL AL AL	P.BL P.BL P.BL P.BL P.BL P.BL P.BL P.BL	Yo Yo Yo Yo Yo Yo Yo Yo Yo	Spi Spi Spi Spi Spi Spi Spi Spi	Tim 31020 Tim 31020 Shu 5572 Shu 5582B Shu 5582B Wis Wis Wis Wis	Ros Ros Ros Ros Ros Ros Ros Ros	L6IHV L6IHV L41HV L6IHV L6:HV L6IHV L6IHV W86IA W86IA	559 G 459 G 559 G 625 G 625 G G G	TX CD CD CD CD CD CD	140 140 168 168 168 142 142 144 168	83 83 101 101 101 87 1/4 87 1/4 88 100	34 34 34 34 34 34 34 34 34	37x2¼ 37x2¼ 39¼x2¼ 40x2¼ 40x2¼ 39¼x2¼ 44x3 44x3 44x3	52x4 44x3 52x4 52x4 52x4 52x4 54x3 52x4 42x4 42x4	ZZZZZZZZZZZZZ
10 11 12 13 14 15 16 17 18	282 361 393 415 453 501 672 468	4.7 4.4 4.9 14.3 4.7 4.9 17.4.4 4.3	176 235 260 264 300 330 420 322 410 506	33.7 40.8 42.1 38.4 48.6 48.6 57. 43.3 54.1 60.0	73-270 83-240 103-260 93-200 98-220 110-220 125-180 125-240 126-185 170-200 170-200	0 L 0 L 0 L 0 H 0 L 0 H 0 H 0 H	GGGGGGGGGCC	A 7-A 7-C A 7-A 7-C A 4-C A 7-A 7-A 7-A 7-A 7-A 7-A 7-A 7-A 7-A 7	21/4 -21/4 -3 -3 -3 -3 -3 -3 -3 -3 -3 -3 -3 -3 -3	14 121/2 133/2 103/2	FP FP CC CC FP FP CC FP	No No Pe Ha Ha Cu No Bu HS	Zen Zen Xen Xen Zen Xen Zen Zen Zen	M M B M C M M M	DR DR DR DR DR DR DR DR DR	DR DR DR DR DR DR DR DR DR	P.BL P.BL P.BL P.BL P.BL P.BL P.BL P.BL	Pe Pe Pe Pe Pe Pe Pe Pe Pe	Spi Spi Spi Spi Spi Spi Spi Spi Spi Spi	Tim 31000H Tim 33000H Tim 33000H Tim 35120TW Tim 35020N Tim 36020N Tim 36020N Tim 36020N Tim 36020N Tim 36020N Tim 36020N	Ros Ros Ros Ros Ros Ros Ros Ros Ros Ros	L6IHV L6IHV W86IA W84TA W84TA W84TA W84TA W84TA W84TA	536 a 536 a 654 a 781 a 815 a 815 a 815 a 815 a 815 a 815 a	TX FD FD FD FD FD FD FD FD	168 168 192 192 192 192 192 192 192 192	102 102 102 120 120 120 120 120 120 120	31 ½ 31 ½ 31 ½ 31 ½ 33 ¾ 33 ¾ 33 ¾ 33 ¾ 33 ¾ 33 ¾	38x2 1/4 38x2 1/4 38x2 1/4 42x3 42x3 42x3 42x3 42x3 42x3 42x3 42x	52x4 52x4 52x4 56x4 56x4 56x4 56x4 56x4 56x4 56x4 56	XXXXXXXXXXX
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miles without an accident between Feb. 1, 1929 and May 15, 1933.

Seven Baker Brothers, Steubenville, Ohio—12 vehicles—323,646 miles without an accident during the 15 months ending December, 1931.

Rainey-Wood Coke Co., Conshohocken, Pa.—9 vehicles—123,403 miles, Jan. 1, 1932-1933.

Wurzburg's Department Store, Grand Rapids, Mich. — 10 vehicles — 166,015 miles, November, 1931 to July, 1933.

Edward F. Clark, Bayonne, N. J.—6 vehicles—286,655 miles, Sept. 1, 1929 to June 30, 1933.

Peerless Laundry Co., Newark, N. J. —10 vehicles — 152,173 miles, July, 1932 to January, 1933.

In summarizing the case for the small fleet safety organization, it becomes apparent that both large and small organizations have the same objectives; that both receive the same kind of benefits; but that in certain respects, the small fleet organization offers advantages unknown to the large.

A safety organization serves two purposes; it conserves life, limb and property, and it reduces operating costs. These reductions come from lower insurance charges, lower accident repair bills, increased mechanical efficiency of equipment through good maintenance, increased efficiency of personnel (since the safe worker is the properly chosen and trained worker) and from better discipline. In all these things, both large and small organizations can share; but in one other thing, the small organization has a distinct advantage.

DESPITE the general impression that it is harder for the management to get results where there is no elaborate set-

up, the reverse is true. In the big organization, the manager must rely upon the reports of department heads and must work through these men. In the small organization, the manager's contact with the driver is direct. He can sit across the table from the drivers, themselves. That has not only the value of linking the manager personally with the safety work in the drivers' thoughts, but that of giving the executive first-hand knowledge. Further, when the driver understands that safety is mutually beneficial to employer and employee, the personal relationship between manager and driver in a common cause is a powerful builder of morale.

In the final analysis, it appears that small fleets can be organized easily for safety work, with no interference with routine, and that they can be organized with a high degree of effectiveness.

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#### SYNTHETIC ENAMELS GIVE MAGIC RESULTS

(Continued from Page 33)

to the fact that the job was done in a draft. Our first experience in this respect was when we did a job on a truck in the doorway on a damp day. The enamel on the truck away from the door dried as we expected but that part exposed directly to the outside remained tacky and we had to do the job over. Now all work is done away from drafts. If shopmen will take note of this fact much of the trouble with "tack" will come to an end.

These simple tricks learned through trial and error now enable us to get a satisfactory job with synthetic enamels.

#### Synthetic Shop Practice

By Jack Crumpt Miller North Broad Storage, Phila., Pa.

NIX on lacquer. It not only cracks on wood but it has to be rubbed down and polished. Anyway, it won't stand up on our jobs. Synthetic enamels hold up pretty well, dry with a gloss and require but little attention outside of an occasional washing. This enamel gives a quick finish and once the man in the shop knows how to handle it, it gives a satisfactory job. Some of these failures are quite ordinary. Others are failures caused through using the enamel without properly preparing the surface.

For instance, if synthetic enamel is put over a painted surface and the metal under that surface happens to have rust on it, the new finish will draw that rust out to show through its finish. In many cases it is not known that the metal is rusty until synthetic enamel has been applied. Then, of course, the entire job has to be removed and done over again. We use a "Deoxidine" wash on metal bodies for removing rust and grease. This is a prepared wash and when used properly, will prevent peeling.

WE are very particular about getting the color we want and take pains to build up the job in order to bring out that color to best advantage. Two undercoats are first applied, and one coat of yellow surfacer. When dry, this is rubbed down with pumice stone until the gray shows through. We then apply three coats of synthetic enamel and rub that down. After the lettering is done, another coat of clear is applied. This job lasts two years.

One thing we learned about syn-

thetic enamel was that it won't stick to the old finish without a primer under it. Our first thought was that we would have to strip down the entire job. We tried a coat of primer and a coat of surfacer over the old finish and then applied the new finish over that with excellent results.

Another difficulty we had, had more to do with preparing the job. In using putty as a filler over the surface, we found that the putty would crack under the paint and come out. We now mix our own putty from whiting to which we add a little varnish and color. Whiting mixed with the varnish becomes brick hard, does not crack nor come out. The synthetic finishes will stick to the putty better, too, for a more lasting job.

The old finish must be dust and grease free if the new coat is expected to stick. We use clear water and pumice powder as a wash over the old surface. Scratches and sears caused by sideswiping posts, doors, etc., are removed with pumice powder on a burlap cloth which is especially good for such work.

A tack cloth, which is a lint free cloth that has been dipped in varnish, is also excellent for removing dust.

Synthetic enamels we are using today give a satisfactory, although not as lasting a job as the old way of doing the work. However, these new enamels certainly are quicker. We turn out a job now in less than a week. A typical job takes about half a gallon of primer, half a gallon of surfacer, 2½ gallons of enamel and half a gallon of clear. Materials, tools, brushes, equipment, etc., stands us about \$35 per truck. To this cost, however, we must add about 75 hours of labor in finishing each truck.

#### Formula for a Magic Job

By Fred Weeber General Baking Co., Philadelphia, Pa.

WE used to get a beautiful job with the good old lead and oil formula. It took a little longer than it does nowadays to do a job though and with time as valuable as it is, we went with the tide to a new kind of finish. Of course, that's synthetic enamel. Lacquer's out of the question because, as you know, it won't stick to wood.

This new enamel has its peculiarities which you usually don't know about

before using it but about which you learn plenty after the first try. We learned, for instance, that you can't put a new finish over the old coat without special treatment. We learned that to prime an old finish and then to put on the new finish is just too bad. It doesn't matter whether the new job is done over an old finish or built up from the wood, unless both a primer and surfacer are used the new finish will strip off. A lot of painters make this error, thinking that a primer is sufficient. Well, it isn't.

SELF-C

Zee How Ezy

As far as we have been able to make out, the cracking, and there's plenty of it, is due to two things. One is the weather. The other is simply the fact that on some woods, two jobs on top of one another won't hold. The new coat pulls off the old one.

To do an enamel job and be sure that it will stay on, we first inspect the old finish. If it needs stripping, off it comes. Otherwise we make sure that it is adhering to the body surface all over. Then we use a primer and two coats of surfacer. We never try cheating on this because to do so is to simply cheat ourselves. The third caution is to watch the weather and do the job accordingly. We keep trucks away from open windows and doors and away from drafts. If the atmosphere is humid we allow more time between coats for drying.

Atmospheric conditions, perhaps, cause more synthetic enamel failures than anything else. One difficulty we have not yet been able to overcome is the peeling away of paint from the edge of the body where drivers make a grab when climbing in and out of their trucks. The moisture from their hands causes the trouble.

W. T. STERN of Stern and Thesen, Philadelphia commercial body finishers, is of the opinion that if a painter waits too long before applying the second coat (longer than an hour), the second coat will pull off the entire job.

Some paint failures in which the finish strips off in sheets shortly after it has been put on may be traced to this poor timing in applying the coats. Timing must also be judged according to the atmospheric conditions and adjusted accordingly. More time in damp weather. Less time in dry weather.



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WHY BUY
New Chains

Repair Them
With Self-Closing
MONKEY LINKS

Carry them on your trucks and busses. Your driver can make instant repairs—no delay. No tools required. Insures safe driving at all times. Fits all tire chains.

FLOWER CITY SPECIALTY CO.
ROCHESTER, N. Y.
At All Reputable Jobbers

# Hand This to the Next Customer You See . .

Let Me Suggest-

THE most economical cost system I know of. Other motor fleet owners and operators have tried it at my suggestion, and say it is fine.

The Commercial Car Journal Standard Cost System is a simple, convenient and inexpensive method of keeping close tabs on your trucks and drivers.

It costs only \$9.50 for 500 Driver's Cards, 60 Monthly Summary Sheets, 1 complete Instruction Book and 1 Binder.

I don't get a cent out of it, but if it makes more money for you, that should mean better business for me. I'm glad to pass along the idea.

The address is:

Chilton Company

Chestnut and 56th Sts.
Philadelphia

Your Dealer

#### GET YOUR MONEY'S WORTH



Trailers, bodies and winches that will easily take the tests of every working day.

Simple design, rugged construction and quality workmanship are rapidly increasing the users of Kingham products.

Make your own comparison of real values at one of our many dealers.

National service and distribution.

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KINGHAM TRAILER CO., Inc.

ISTH & HILL STS... LOUISVILLE, KY.









#### .... IN THIS WIDER MARKET

The field for the light duty truck is no longer limited to light hauling jobs. Increased load carrying capacity and longer wheel base are both achieved at nominal cost by adding a Perfection 'Super-Duty' Third Axle Unit to your 4-wheel chassis.





You can save many a truck operator a surprising amount, both on his original investment and on operating costs.

Get all the information from us at once.
THE PERFECTION STEEL BODY CO.

GALION, OHIO



#### TIRE GROOVING

U. S. Post Office, U. S. Treasury, Shell Petroleum, Cincinnati Street Railway, Goodyear, Goodrich, General, International—just a few fleet operators who are getting 10,000 and more SAFE NON-SKID extra miles by using KWICK-KUT PATTERN TIRE GROOVERS.

"PROOF" is sent free. New complete catalog. Write for FREE TRIAL OFFER.

Kwick-Kut Mfg. Co., St. Louis, Mo.

#### Saves Money for FLEETS



#### Fleet Owners—Read This

If you've never considered the many advantages of all-wheel-drive traction and dependability, it's time to get the full Marmon-Herrington story. When you analyze the facts, it will be clear and evident that Marmon-Herrington all-wheel-drive trucks are safer, faster and more efficient—capable of hauling far more ton-miles at far less cost. Complete information will be sent without the slightest obligation.

MARMON-HERRINGTON
INDIANAPOLIS, INDIANA
28 All-Wheel-Drive Models, 1½ Tons Up

## ONLY B.&J. TRAILERS HAVE GRAVITY SPRING SUSPENSION

Write for bulletin

B. & J. TRAILER CO.
3915 S. Michigan Ave. Chicago

#### I Learned About Trucking From Her

(CONTINUED FROM PAGE 36)

Canada, Philadelphia, Baltimore, Muscle Shoals and all other points. All helpers must know how to drive. On especially long and important hauls the mechanic goes along as a helper to facilitate repairs, if necessary.

HER trucks operate an average of 300,000 revenue miles. Rates are based on operating costs plus a fair profit, plus the total interest on money required throughout the year to finance operations.

Helpers are paid by the hour. Foremen drivers (four of them) are paid by the week and have the added responsibility of keeping their eyes and ears open and ferreting out leads which they turn over to Fleetwoman Libe. She in turn goes out to sell the prospect.

#### Management and Selling

THE sales routine, if it may be called that, has method. Most of her time is spent on the road and little in the office because she believes that a freight hauler's place is out looking for business.

Fleet owners who think they have their hands full with the many complicated angles of their business might stop a moment to consider the fact that one of their profession, and a woman at that, pooh-poohs such troubles as arise with trucks, deliveries, maintenance, employees and the difficulties of getting business.

"The most difficult part of the business," says Mrs. Libe, "is keeping it! I get all pepped-up working on a prospect but after I land him I really begin worrying about keeping the business."

IF it appears that the business is run closely by the ledger, don't be fooled. It is. Bookkeeping, watching costs, preventive maintenance, contracts at a profit, the process of putting a pencil to paper and knowing where your money goes, is the simple success formula of Fleetwoman Libe. In three words—good business management.

When asked what she thought was the trouble with the trucking industry, she replied, "I believe the trouble with the industry is the men who are in it. They are simply bowled over at the thought of putting pencil to paper. Perhaps their difficulty may be put down as a lack of knowledge of the business and particularly of business management, cost accounting, etc. These faults reflect on the industry."

#### Maintenance

BOOKKEEPING, however, is not the cure-all. Preventive maintenance is also important to the well-being of the business. That term includes a lot of things. It means efficient men. It means modern trucks capable of hauling their load. These factors cut costs in half.

Most of the maintenance work is done in the shop. Reboring jobs are sent out. Additional equipment is always purchased new. It is the conviction of this operator never to buy or sell a used truck. Old units are dismantled and old parts in good condition are used for replacements.

Periodically a billboard is posted showing the cost of operation of each man's truck. This method serves its purpose of keeping costs in line. As a matter of preventive maintenance trucks are checked once a week. If maintenance costs run too high, the maintenance man finds himself on the carpet. He must keep trucks operating in good condition. Due to careful maintenance, no particular repetition of trouble has ever been experienced. Truck bodies

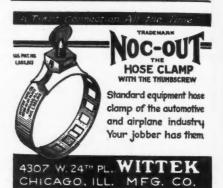
Increase shipping floor capacity— Make extra trips with trucks you have now

BY USING

"ROLOFF" DEMOUNTABLE BODIES

ASK US HOW

ROLOFF, INC. KENDALL SQUARE CAMBRIDGE, MASS.



#### **FWD Trucks**

are available in sizes ranging in capacities from  $2\frac{1}{2}$  to 10 tons.

Write for bulletin.

The Four Wheel Drive Auto Co.
Clintonville, Wis.
Kitchener, Ontario, Canada

are gradually being changed to aluminum, thus providing for 2000 lb. of extra payload. Pre-entive maintenance is law with Fleetwoman Libe. She believes it has to be, considering that the large units represent an investment of from \$5,000 to \$10,000 each.

A larger building is being remodeled to facilitate bigger operation plans. The new plant will have silk storage vaults, general storage rooms, offices, and living quarters for the maintenance man. Garage space as well as the shop will be enlarged. Two fuel pumps will facilitate gas supply.

#### At Home

SHE is devoted to her family, loves her home, Phillipsburg, and the nearby Pocono Mountains. She belongs to the Easton Country Club, plays golf, attends lectures at Lafayette University just across the river and is interested in winter sports. Although she averages only four to five hours sleep a day, she can sleep 24 hours at a stretch when very tired. A love for business—and nerves—keep her going.

COMMERCIAL CAR JOURNAL

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#### White Underslings Power

(CONTINUED FROM PAGE 50)

transmission, as shown in section in one of the illustrations. This is a spring-return plunger pump, the barrel of which is set into an inclined drill hole in one of two adjacent gears, while the plunger is actuated by a cam on the rim of the other gear. Provision for power take-offs is made on all transmissions. Universal joints are of the needle-bearing type.

The rear axle used in the Model 731 is a double-reduction full-floating design with heat-treated steel tubes pressed into the one-piece housing. The first reduction is by spiral bevel gears and the second by herringbone gears. An oil-circulating system has been worked out for the rear-axle gears which assures continuous supply of lubricant to the tooth-contact surfaces and the bearings even under low-speed and cold-weather conditions. The driveshafts are splined at both ends, and special dowels transmit the power to the hubs of the rear wheels. The housing is cast in one piece and has heavy brake supports cast on. Radius rods are used and are provided with automatic means of adjustment for wear in parts, and with grease boots at the The rear axle of Model 730 joints. is identical with the one described except that it contains a single-reduction final-drive gear, with a standard reduction ratio of 7.14 and optional ratios of 6.29, 5.67 and 5.22.

All springs are of alloy steel and of the semi-elliptic type. Front springs are shackled at the rear end, which is the proper arrangement in view of the fact that in these trucks the steering arm is located forward of the front axle. Helper springs are standard.

Owing to the comparatively short wheelbase, coupled with more than the usual overhang at the front, the frame of the two trucks has an exceptionally high factor of safety. It is made of heat-treated pressed steel channels of 8 by  $3\frac{1}{2}$  by  $\frac{1}{4}$  in. cross section for the side rails and has both tubular and pressed steel cross members.

The steering gear, which is of the cam-and-lever type, is designed to be mounted in a saddle, so that it can be easily and quickly removed when required. Owing to the great width of the front tread (80 in.), the truck can be turned in a circle of small radius. The front axe is of the reverse Elliott type and is specially designed to withstand severe braking torque.

Service brakes are of the four-wheel, mechanical, two-shoe type, air-operated. Gun-iron drums are used and are heavily ribbed to minimize distortion under brake application and to increase the heat-radiating surface.

### Your Truck Doing All Day?

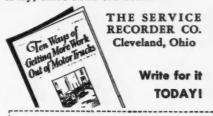
The Servis Recorder gives you a complete record, in fact a picture of just what your truck did for the past 24 hours.

#### Save \$500 per truck per year

Motor trucks are expensive to operate. The running time of a truck costs from \$3 to \$5 an hour! That's why delays, avoidable delays, are so costly. Half an hour per day avoidable idle time easily costs you \$500 per year. It's a big loss. That's why over 70,000 trucks are already Servis Recorder equipped.

#### These delays STARE out at you

When you can actually see these delays, you can stop them—easily. How? It's a fascinating story, but too long to tell here. The coupon brings it. Act today; that's none too soon!



THE SERVICE RECOR	DER CO., CCJ Cleveland, Ohio
Please send us, without of Getting More Work of	obligation "10 Ways
Company	
Attention of	
Street	
.City & State	

The total effective braking area is 632 sq. in. Ventilated dust shields are provided. A disk-type parking brake with four shoes is mounted at the rear of the transmission.

Dash, wheel houses, front fenders and radiator grille are built into the cab, which is ventilated by two large ventilators placed in the front panel, one on each side, and by two large, chromium-plated windshields hinged at the top and swinging forward. The cab is thoroughly insulated by means of double paneling with air space between. Floor and toe-boards are made either of Plymetl or of metal insulated with Seapak.

Models 730 and 731 come in five lengths of wheelbase of 108, 126,

144, 162 and 180 in., while Model 731T (tractor) comes in a wheelbase length of 100 in. Cast steel wheels are fitted regularly.

As regards performance, the single-reduction Model 730, which has a standard rear-axle ratio of 5.22 and direct-drive on top gear in the transmission, will give a speed of 52.5 m.p.h. at 2400 r.p.m. of the engine and have a gross ability of 3.62 per cent which means that it will climb grades up to this steepness in high gear with a gross load of 26,000 lb. The Model 731, with a standard gear ratio of 9.51 and an overdrive ratio of 0.789, making the effective reduction ratio 7.5, at 2400 r.p.m. of the engine gives a gross ability in high gear of 4.35 per cent.

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